

NETWORKWORLD

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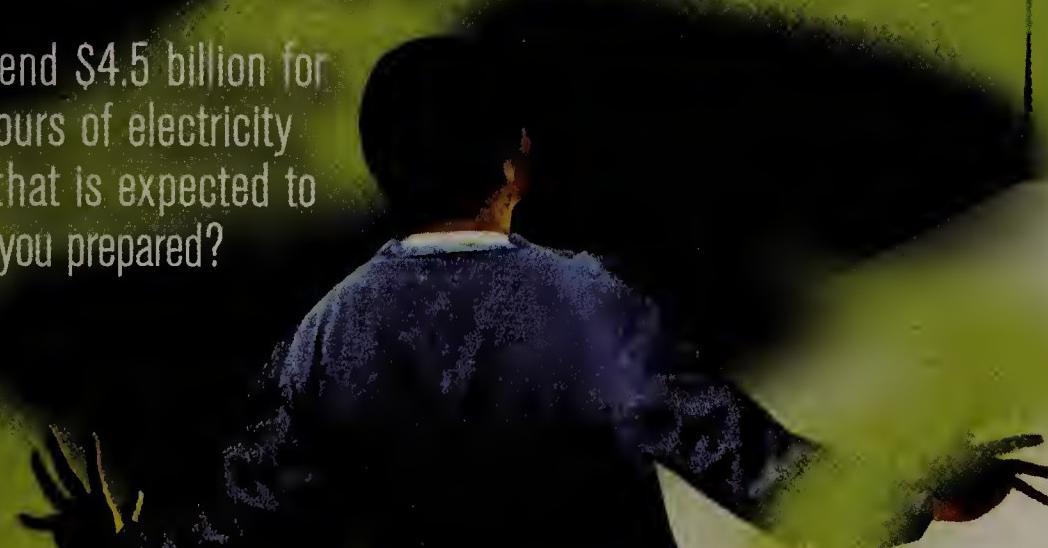
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WHAT YOU DON'T KNOW
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U.S. data centers spend \$4.5 billion for 61 billion kilowatt-hours of electricity annually, a number that is expected to double by 2011. Are you prepared?

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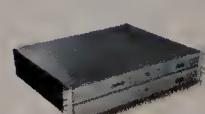




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BRIAN STAUFFER

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PAGE 30.

GOODBADUGLY

Open source faces down petabytes of data

The University of California at San Diego's supercomputing group has upgraded its data-management software and made it available as an open source offering designed to handle petabytes of data. The Data-Intensive Computing Environments group at the San Diego Supercomputer Center has issued Integrated Rule-Oriented Data System 1.0, which the outfit says improves on the Storage Resource Broker it has developed over the past 10 years.

The downside of virtualization

Some 54% of 300 CIOs and other top executives polled consider managing their virtual-server environments a critical priority, but more than half aren't confident they are doing it effectively, according to a new CA survey.

U.K. to play hardball with pirates?

The U.K. government may cut off 'Net access for Web users who illegally download music, movies and other digital media.

Documents leaked to *The Times* newspaper say all ISPs would be required to institute a "three strikes" policy against users caught pirating copyrighted material.

POLL

A snapshot of how networkworld.com visitors voted on a key networking issue last week:

Will a Microsoft-Yahoo merger have any real impact on Google?

Yes, the Microsoft-Yahoo combo will kick butt **20%**

No, Google is a monster **58%**

I don't care **22%**



Total voters for this poll: **102**

Vote and discuss: www.nwdocfinder.com/3756

IP address plan could hurt IPv6

BY CAROLYN DUFFY MARSAN

Internet policymakers are considering sweeping changes to the way they distribute IP addresses that could let network operators make money by transferring unused blocks of IPv4 address space to others in need. One result could be to lessen the incentive to move to IPv6 anytime soon.

The American Registry for Internet Numbers (ARIN) posted proposed changes to its IPv4 address-space transfer policy on its Web site last week. ARIN is a nonprofit group in Chantilly, Va., that doles out IPv4 and IPv6 address space to ISPs operating in the United States, Canada and the Caribbean.

Under the proposal, ARIN would let ISPs transfer IPv4 address registrations, and ARIN would provide a list of IPv4 address blocks that are available for transfer.

Until now, IPv4 addresses have not been tradable goods. When an organization finished using IPv4 address space, it was supposed to return it to one of five regional registries, such as ARIN in North America (see graphic). The only time ISPs can transfer IPv4 address space is when they are acquired.

ARIN's proposed changes are designed to help network operators cope when the Internet runs out of IPv4 address space, which is expected to occur in 2012.

"Industry demand for IPv4 addresses will not stop, but the current supply channel, namely the unallocated IPv4 address pool, will have run out," says Geoff Huston, an expert on IPv4 address depletion and chief scientist at the Asia Pacific Network Information Centre (APNIC), the Australian counterpart to ARIN. "So, as with any other commodity out there, trading and pricing gets included into the distribution function."

IPv4 is the Internet's main communications protocol. It uses 32-bit addresses and can support around 4 billion IP addresses. IPv6 is a long-anticipated upgrade to IPv4. IPv6 uses a 128-bit addressing scheme and can support billions (2^{128}) of IP addresses.

The IETF designed IPv6 in the mid-1990s to expand the available IP address space. However, few ISPs or enterprises have upgraded to IPv6.

The issue of IPv4-address depletion has received a great deal of attention in the last few months. Experts say more than 80% of IPv4 addresses have been distributed.

Huston says it is too late for the Internet to avoid creating a way for ISPs to transfer their

See Addresses, page 17

How IP addresses are assigned

IANA

The Internet Assigned Numbers Authority allocates IPv4 and IPv6 addresses to five Regional Internet Registries.

Afrinic (African Network Information Centre): Africa

APNIC (Asia Pacific Network Information Centre): Asia/Pacific

ARIN (American Registry for Internet Numbers): North America

LACNIC (Regional Latin-American and Caribbean IP Address Registry): Latin America and some Caribbean islands

RIPE NCC (Réseaux IP Européens): Europe, the Middle East and Central Asia

RIRs

RIRs assign IPv4 and IPv6 addresses to ISPs.

ISPs

ISPs acquire IPv4 and IPv6 addresses for their government, university and corporate customers, which need them to support their growing networks.

5 virtualization management companies to watch

BY DENISE DUBIE

Virtualization is taking enterprises by storm, and ill-prepared IT managers might find themselves struggling with a proliferation of virtual machines, increased configuration complexity and other management issues that come with widely deploying virtual servers.

Yet IT cannot be blamed, industry watchers say, because most traditional management tools updated to take on virtual servers don't do the job adequately.

"The larger, established management vendors arrived late to managing virtual servers because ultimately they approached it as though it was just another operating system," says Andi Mann, research director at Enterprise Management Associates. "Add-ons to traditional tools are not enough, and there are big gaps in

the market across different disciplines, such as patch management, configuration management, discovery and inventory."

Those technology gaps have financial analysts bullish on start-ups offering products that install easily, track VMs from inception to destruction and essentially approach managing a heterogeneous virtual environment in a whole new way. "It is an early and dynamic market. We will see lots of competitive entry in this space," says Lars Leckie, an associate at Hummer Winblad Venture Partners, which recently led a \$4.6 million first round of funding for VKernel.

We shine a spotlight on five start-ups that have taken on the challenge of managing virtual worlds. (All claim to have customers, but

See Virtualization, page 14



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Can we trust the government?

Re: "Lockheed wins 10-year FBI biometric contract" (www.nwdocfinder.com/3742): My problem with this is not that the FBI is collecting more biometrics data. They already have more information about people of interest, former military, former government employees, etc., than you can probably imagine. No, the problem I have with this is that a government agency is going to collect additional information about individual identities when no government agency has proved to my satisfaction that it is capable of adequately protecting sensitive data. Sometimes I feel like giving my personal information to the government is like posting it on the Internet. Let's see — how many times has the VA lost my information? I've lost count.

Tom Olzak

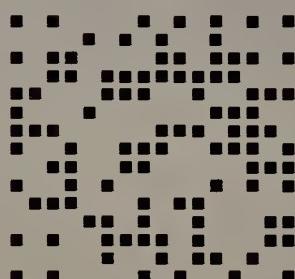
Discuss at www.nwdocfinder.com/3743

Can we trust social networks?

Re: "Aggregating social network data" (www.nwdocfinder.com/3744): What happens if you have people in your social network who didn't want to be or have no knowledge of it? There is increasingly a loss of control. As the use of these sites is becoming more popular, I always wonder about the people who have their privacy violated without their knowledge on these sites. For example, you can tag people in photos on Facebook even if they are not a Facebook member. Right away those people have two pieces of hugely important bits of identity lost (their picture and name) from them without ever having been asked. In this scenario, people are losing choice and control of their own identity and associated data because Internet-y people want to aggregate and potentially

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publish their social network.

Andy Hunt

Discuss at www.networkworld.com/3745

The successor to Fibre Channel over Ethernet

Re: "FCoE and the Nexus 7000 — it's only temporary, iSCSI will win" (www.nwdocfinder.com/3746): Clearly the writing is on the wall for native Fibre Channel's long-term survival. Which technology dethrones the king will depend on many factors.

iSCSI makes sense for SMB and where performance and connectivity to existing Fibre Channel storage are not high priorities.

FCoE at 10Gbps will provide high performance, connectivity to existing FC devices via simple gateways and leverage of SAN management tools.

As customers look towards alternatives to Fibre Channel, they can also consider InfiniBand-connected storage using SRP or NFS over RDMA. This especially makes sense for customers building InfiniBand-connected clusters and when low latency and high bandwidth are very important.

Graham Smith

Discuss at www.nwdocfinder.com/3746

Needs some Sage advice

Re: "Complex software? Plan to fail!" by Mark Gibbs (www.nwdocfinder.com/3747): I work in IT for a small regional bank and was put in charge of inventory of all tech assets. The bank purchased Sage FAS 100 asset accounting and inventory to do this.

So I learned the software, contacting "support" when I ran into problems. Like you said in your column, the devil is in the details. The software doesn't do normal things that even Microsoft Excel can do! I spent weeks on the phone back and forth with "support" trying to figure out something as simple as hiding/showing fields for various assets. Finally a tech agent was lucky enough to run into someone from development who told him, "FAS doesn't support that option."

I can only imagine the hell that is an ERP package from this company.

If you have any suggestions for asset inventory solutions, I'm all ears! (Although we are basically stuck with Sage ...)

Greg Evans

Discuss at www.nwdocfinder.com/3748

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BLOGOSPHERE

■ Identity theft, online fraud lead FTC top 20 consumer complaints in 2007. The Layer 8 blog reports: "The Federal Trade Commission today released the list of top consumer fraud complaints for 2007 and showed that for the seventh year in a row, identity theft is the number one problem. Of 813,899 total complaints received in 2007, 258,427, or 32%, were related to identity theft. Consumers reported fraud losses totaling more than \$1.2 billion; the median monetary loss per person was \$349, the report states. The report also breaks out complaint data on a state-by-state basis, and the metropolitan areas with the highest per-capita rates of reported consumer fraud complaints are Albany-Lebanon, Ore.; Greeley, Colo.; and Napa, Calif." www.nwdocfinder.com/3752

■ Nortel taunts Cisco: Nexus ain't a Lexus. Cisco Subnet blogger Brad Reese writes: "In his most recent blog entry, [Nortel's] Tony Rybczynski suggests reading the fine print of the Cisco Nexus 7000. 'So if the Nexus is no Lexus, with questionable quality, performance and reliability, then what exactly is it? It's touted as a unifying data center platform but doesn't even support Fibre Channel. Or does it mark the beginning of the end for the Catalyst 6500?' Reese asks, 'Do you concur?'" www.nwdocfinder.com/3753

■ Meet the latest entrant in the "iPhone killer." Cool Tools Keith Shaw writes: "At the Mobile World Congress 2008 show in Barcelona, Sony Ericsson and Microsoft announced the Xperia X1 device, a new Windows Mobile phone that includes mobile Web communication features, multimedia entertainment and other premium features. The arc-slider phone will be available in selected markets' starting in the second half of 2008, Sony Ericsson said. The Xperia X1 has a 3-inch wide touch-screen VGA display, and a full QWERTY keyboard that slides out (in an arc!) from underneath the display. Running the Windows Mobile OS, the phone is designed for users who want one phone for business and personal usage. Microsoft says its vision is to make the concept of 'One Phone for Your Life' a reality." www.nwdocfinder.com/3754

■ Yahoo itching in its own skin. Microsoft Subnet blogger Mitchell Ashley writes: "Do you get the sense that the options for Yahoo are slowly diminishing? After rebuking Microsoft's unsolicited offer, it's not clear which of the industry gunfighters will move next, Yahoo or Microsoft?" www.nwdocfinder.com/3755

INTERVIEWS, THE COOLEST TOOLS AND MORE

ITV
VIDEO

COOL TOOLS:



A Bluetooth walkie-talkie?

Callpod's Dragon Blue-tooth headset works with your mobile phone, but can also pair up with a second Dragon unit to create a full-duplex voice channel for two people to talk to each other.

www.nwdocfinder.com/3757

IDG NEWSWIRE:



Tank-to-tank networking

Japan's C4I (Command, Control, Communications, Computing and Intelligence) system on a tank can share information with nearby tanks.

www.nwdocfinder.com/3758

IDG NEWSWIRE:



Android concepts come to life

Google's Android software platform for mobile phones gets the prototype treatment at Barcelona's Mobile World Congress 2008.

www.nwdocfinder.com/3759

BEST OF NW'S NEWSLETTERS

White Castle satisfies craving for user authentication

Technology executive: For more than 80 years, White Castle restaurants have created cravings for their signature hamburgers called Slyders. You might think that a company founded in 1921 would be slow on the uptake of cutting-edge information technology. Not so for White Castle. This company has found a recipe for saving millions of dollars a year on processing paperwork for its 12,000 employees, and one of the ingredients is biometrics.

www.nwdocfinder.com/3749

Wireless: Mobility has become a mass phenomenon that should be causing enterprises to take a close look at their wireless spend. Monthly fees are often buried in departmental expense reports or otherwise insidiously draining coffers as monthly plans and negotiated corporate discounts go unoptimized. A number of experts offered advice at the recent Mobile Explosion '08 conference on how to better manage cellular activity within enterprises to tame costs. I mentioned some of them in the last newsletter. I wanted to point out a potential "gotcha" when it comes to taking experts up on one tip, which involves including cellular devices for

employees' personal use in your RFP.

www.nwdocfinder.com/3750

Identity management: The recent Société Générale trading scandal is being portrayed by many as another example of the poor security that passwords provide (see, for example, "Forgotten IT chores may have led to bank meltdown"). But digging further into the tale of "rogue" trader Jerome Kerviel reveals another distinctly plausible cause of the problem. It's been reported that oversight and risk management were in short supply at the French banking concern, but — as a number of correspondents have pointed out to me — governance, the "G" in GRC (Governance, Risk Management, Compliance) was most likely the major cause of Kerviel's ability to bypass what little security was in place. In fact, he really didn't "bypass" any security as far as we know. He did use multiple passwords and accounts (which, evidently, were traded amongst the traders willy-nilly) but the real "secret" to the scandal was the amount of entitlements that Kerviel built up as he moved from one position to another, and from one department to another.

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YEAH, WE'RE WORKING ON THAT

SCO in line for \$100M bailout

Embattled SCO Group reached an agreement with a private equity firm that plans to provide the vendor as much as \$100 million and take SCO private. SCO, nearly ruined by its own litigation rampage that ended with a federal judge ruling that Novell owned the Unix copyright, has been in Chapter 11 bankruptcy since September. Last Thursday, however, Stephen Norris Capital Partners and partners from the Middle East stepped up with \$100 million and a reorganization plan for SCO that includes new product lines. The private equity firm, which is based in New York, said it would see SCO's legal claims "through to their full conclusion." Once the proposed agreement is finalized, SCO CEO Darl McBride would reportedly be required to resign.

www.nwdocfinder.com/3762



Forrester slashes IT spending forecast. As CIOs prep for what could become a U.S. economic recession, Forrester Research has revised its earlier forecast for a 4.6% increase in U.S. purchases of IT goods and services down to a more modest 2.8%. The research firm says it based the updated numbers on newly available economic data that points toward a slight recession in the United States that will impact IT spending for more than half of this year. Forrester also forecasts that Canada and Latin America will see spending slow. "While it is by no means certain that the U.S. economy will in fact experience a recession, the risks of one are high enough to justify a more conservative outlook for the IT market," said Forrester Vice President Andrew Bartels.

www.nwdocfinder.com/3763

Hillary Clinton spam sighted in the wild. The Hillary Clinton election campaign is being exploited in a spam message that tries to trick users into downloading a Trojan

to their desktops by pretending to offer a link to a video of a campaign speech. "It's the first time we've seen spam like this targeting Hillary Clinton," says Doug Bowers, Symantec's senior director of anti-abuse engineering. The U.S. presidential campaign is in full swing, but the only other candidate's name being abused for malware purposes in this way is Ron Paul, according to Symantec.

www.nwdocfinder.com/3764

Microsoft executive shakeup prepares for Yahoo acquisition. Microsoft confirmed a number of high-level executive changes, moves that could be designed to better position the company to digest an acquisition of Yahoo. In addition to a number of executive promotions, Microsoft announced that Bill Veghte, senior vice president of the Online Services and Windows Business Group; Satya Nadella, senior vice president, Search, Portals and Advertising Group; and Brian McAndrews, senior vice president of Microsoft's Advertiser and Publisher Solutions Group, are all taking on new responsibilities in running Microsoft's online services, including Windows Live, Search and MSN. Microsoft may be positioning Nadella to take on the responsibility of the technical integration of Yahoo if the acquisition happens, says Rob Helm, an analyst at Directions on Microsoft. "Microsoft is anticipating a shift in its online strategy around the purchase of Yahoo, which means, among other things, that they're replacing people running the old strategy," he says.

www.nwdocfinder.com/3765

Sun buys open source desktop virtualization vendor. Sun has acquired Innotek, an open source desktop virtualization vendor that makes software targeted at developers who want to build, test and run applications on multiple operating systems. Sun acquired the small company in a stock purchase, but did not disclose the terms of the deal. Innotek's VirtualBox product lets PCs running Windows, Linux, Mac or Solaris run multiple

operating systems side-by-side. VirtualBox will remain free of charge under Sun and be placed in the company's xVM portfolio of virtualization products.

www.nwdocfinder.com/3766

Lawmakers introduce new net neutrality bill. Two lawmakers have introduced legislation that would prohibit broadband providers from blocking or impairing Web content from competitors. Representatives Ed Markey (D-Mass.) and Chip Pickering (R-Miss.) introduced the Internet Freedom Preservation Act. The bill says it is U.S. policy to "guard against unreasonable discriminatory favoritism for, or degradation of, content by network operators based upon its source, ownership, or destination on the Internet."

The bill also would require the FCC to open a proceeding on broadband services and consumer rights. The FCC would be required to investigate whether broadband providers have adhered to its August 2005 policy that providers should refrain from blocking or interfering with Web content.

www.nwdocfinder.com/3767

Novell acquires open source collaboration vendor. Seeking a real-time makeover for its collaboration wares, Novell has acquired SiteScape, a developer of open source collaboration tools. Last year, the two began a partnership that resulted in Novell Teaming + Conferencing, which is based on SiteScape's ICEcore platform for Web-based team workspaces and real-time conferencing. Novell plans to continue to offer Teaming + Conferencing as well as support other SiteScape tools at least through 2010, including Forum ZX and ST, which provide chat, threaded discussion, blogs, wiki, workflow, and document sharing. Novell's current GroupWise collaboration platform had been missing much of the real-time and Web 2.0 technologies that are beginning to define the next wave of collaboration.

www.nwdocfinder.com/3768

Not enough IT workers on staff, survey finds. A shortage of IT workers on staff is the top IT-related concern of C-level executives, according to research commissioned by the IT Governance Institute. Close to 60% of 749 CEOs, CIOs and other C-level executives reported that an insufficient number of IT staff continues to pose a problem in their organization. That number has grown since 2005, when 35% of those polled in a similar survey reported insufficient IT staff as an issue. Close to 50% said IT service delivery problems are the second most common problem they have experienced with IT in the past 12 months, and more than one-third (38%) consider staff with inadequate skills a common problem.

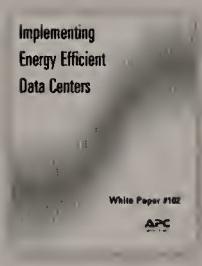
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Microsoft ships 6 critical patches

BY JOHN FONTANA

Microsoft last week released 11 security patches, six with the highest rating of "critical," that span Windows, Office and Internet Explorer. Some say, however, it is a combination of two noncritical vulnerabilities that should catch the eye of corporate IT.

Of the six critical vulnerabilities, none requires any more user interaction than opening a document or visiting a malicious Web site. All six let an attacker take complete control of a user's machine.

The vulnerabilities affecting Internet Explorer as part of Bulletin MS08-010 are troubling, experts say, because of the widespread use of IE 6 and IE 7, which are both at risk.

"In the past, a lot of the IE stuff has been around the scripting engines, but this is in the core HTML-rendering engine," says Don Leatham, director of solutions and strategy at Lumension Security.

Office, another widely used client, is vulnerable in critically rated patches MS08-008, -009, -012 and -013.

"I would tell my mom to install 010 first, but corporate users should install 006 and 005 first," says Eric Schultze, CTO of Shavlik Technologies. (See graphic.) He says MS08-005 and MS08-006, while rated important, can be viewed as critical because they allow a hacker to gain control of a Web server and escalate privileges from user to admin. "With the combination of 006 and 005, I can remotely attack your Web site and become an administrator," he says. "Each one is rated important, but I call them critical in both cases."

"006 is back to the days of Code Red where you can execute code on a Web server," Schultze says. "That means I can execute TFTP [Trivial File Transfer Protocol] and have TFTP come back to my machine and upload hacker tools. I can end up with a C prompt of your Web server. I can have shell access to your Web server as a user. I call that critical right away. I can install a port redirector on that system so I can attack other system in the DMZ and use the port redirector to bypass your firewalls and filtering rules."

Schultze says the final dagger comes with the MS08-005 patch. "Combine that with 005, which allows a user of a Web server to become administrator of a Web server. So I just hacked you with 006 and now as a user I can run more code to become an admin."

The last time Microsoft had as many patches rated critical was last May, when it had seven. The last time it had more than 11 patches was February 2007, when 12 were issued.

The other five patches for February 2008 are rated important and affect Active Directory, the Windows TCP/IP stack, Internet Information

The deadly duo

Two patches rated "important" that were part of the 11 released last week by Microsoft can create a serious problem in combination, and should have been rated "critical," according to some experts.

Patches	Affected software	Description	Potential consequence
MS08-005	Internet Information Server versions 5.0, 5.1, 6.0, 7.0	Users can execute code and change privileges on the machine.	Hacker can upgrade privileges from user to admin.
MS08-006	Internet Information Server versions 5.1, 6.0	Uses can execute code and install hacker tools, get shell access and install software, such as port redirectors.	Hacker controls machine and can launch stealth attacks on other machines on the same network.

Server and Office.

"There are a number of concerns, and with so many critical vulnerabilities it really will be on an organization-by-organization basis as far as where people start," says Jonathan Bittle, director of technical account management for Qualys. "Office and Internet Explorer are two really key business tools, so the fact that a number of these address Office and IE means those patches are probably the single largest concern for most people."

The patch releases are part of Microsoft's

Patch Tuesday, which falls on the second Tuesday of each month. Last week, as part of its monthly preliminary announcement, Microsoft said it had 12 patches and seven critical vulnerabilities, so clearly the company is still working to patch one other flaw.

Schultze says the preliminary announcement sent to him last week specifically mentioned the seventh critical vulnerability as a "Jscript/VBScript" issue.

Microsoft competitor Apple also released 11 fixes for its software, including Mac OS 10.5, Safari and Mac OS Directory Services. ■

Buzz

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Did it get you what you wanted?

It worked great. Certainly it took a tactic (ignore calls, do not engage) away from my former employer, and I know that it directly generated internal dialogue (Why is caller ID not working right for my phone. How did he do that? Is he allowed to do that?) which was the objective of the exercise....I got 100 percent of what I was owed.

Having used the service yourself, how could you see it being abused?

Say you receive a call from your bank telling you that your card is suspected of having had fraudulent use. The caller ID says it's your bank and the toll-free number is the real number of their fraud department. You trust the caller ID displayed and provide all the information needed for Boris in Estonia to rob you blind.

Telemarketers could use this mercilessly. Collections agencies (kind of the role I was

forced into) could avoid creditor call screening. Stalkers could use this to harass their victims....The truth is caller ID is near ubiquitous, it is trusted info by most people, and the abuse or fraudulent usage of such a service should be very severely punished.

Yet you went ahead and used it anyway?

Yep, sure could appear to be hypocrisy and I'm not sure that it isn't. I'm not convinced that we do have tough enough (or clear enough) laws to penalize misrepresentation of caller ID for criminal purposes, and there is nothing that Spoofcard did that I can see that would prevent its misuse (like announcing "Spoofcard, this call is purely for entertainment purposes" when the call connected; callback with "Spoofcard, the last call you received was a joke", etc.). I feel like a farmer that once used fertilizer and diesel to blow up a tree stump: Sure was easy, worked great, cheap, didn't hurt anyone... but what could a bad guy do with this?

Spoof comments to buzz@nww.com.



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NEWS ANALYSIS

Virtualization

continued from page 4

none were willing to name them.)

Embotics

Founded: April 2006

Headquarters: Ottawa, Ontario

Management: Jay Litkey, founder, president and CEO, also founded Symbium, a company that focused on autonomic computing and the automated management of IT infrastructure. Embotics acquired the development team and technology of Symbium and worked to apply it to virtual server management.

Funding: Privately funded by angel investors.

What company offers: V-Commander software, which became generally available in December 2007, provides centralized, policy-based management of VMs. The software tracks a VM throughout its entire life cycle.

Why it's worth watching: "Embotics is coming at the problem of managing VMs from a broad, long-range view, incorporating inventory, usage, managing resources, applications and the policies that apply along the duration of the VM's life cycle," says Rich Ptak, founder and principal analyst at Ptak, Noel & Associates.

Where company got its name: CombineD the idea of embedded autonomics — which are essential to managing virtual environments — to come up with Embotics.

Fortisphere

Founded: October 2006

Headquarters: Chantilly, Va.

Management: Michael Harper, CEO and president, formerly held positions with IBM and USinternetworking; John Suit, principal founder and CTO, previously founded and served as CTO at SilentRunner, a company acquired by CA.

Funding: \$10 million in Series A funding in November 2007, led by Fairhaven Capital Partners and Globespan Capital Partners.

What company offers: The Virtual Essentials suite includes two products: Virtual Insight and Virtual Foresight. Virtual Insight runs on hypervisors from VMware, Microsoft and Citrix Systems XenSource. Once installed, the software provides details around VM configurations, including patches, hot fixes and applications. The software also allows IT staff to associate business attributes, such as owner, functional group and trust level, with each VM. Virtual Foresight, which provides policy-based management and automation capabilities, is scheduled to become generally available in late spring.

Why it's worth watching: "Fortisphere is working on the notion that configuration, change, life-cycle management and even security management of VMs will help desktop, server and storage pros get in front of management issues

around virtualization," says Stephen Elliot, a research manager at IDC. "For many organizations, the performance management requirements don't change when they go from physical to virtual servers, and a complete life-cycle approach will have to be put in place to meet those requirements."

Where company got its name: Fortisphere executives wanted to convey the security and control that effective monitoring and policy-based management would deliver to the virtual sphere and combined "fortis" — which in Latin means strong — with "sphere."



ManageIQ

Founded: April 2006

Headquarters: Mahwah, N.J.

Management: Joseph Fitzgerald, co-founder and CEO, previously served as CTO and director of product development for HP's change- and configuration-management software business. He joined HP as part of the company's acquisition of Novadigm, which Fitzgerald also co-founded; Oleg Barenboim, CTO and co-founder, also worked as an R&D leader at HP and previously worked at Novadigm.

Funding: Self-funded by founding members.

What company offers: Enterprise Virtualization Management Suite includes technology that allows the software to sit on the virtual fabric and see into VM containers. With that capability, ManageIQ's applications can perform network, host and virtual-instance inventory, as well as manage configurations.

Why it's worth watching: "ManageIQ has a lot of experience on the client side of things, and they have paid extra attention to how to manage configuration and change across a lot of endpoints," Elliot says. "Most IT shops will have more than one virtualization platform installed, and that means a lot of complexity. ManageIQ has seen that with their Novadigm history, and they are coming at managing VMs with that perspective."

Where company got its name: Company executives pulled together "manage" and "IQ" to represent their goal to offer customers smart management for virtual infrastructures.

SignaCert

Founded: April 2004

Headquarters: Portland, Ore.

Management: Wyatt Starnes, founder and CEO, previously founded change auditing software vendor Tripwire, and is a co-founder of Regional Alliances for Infrastructure and Network Security, a nonprofit, public-private alliance formed to accelerate the deployment of technology for homeland security.

Funding: \$10 million in Series A funding in December 2005 from DCM-Doll Capital Management, Intel Capital, SmartForest Ventures and GarageTechnology Ventures.

What the company offers: Enterprise Trust Server is an appliance-based software

measurement solution that captures, organizes and compares what's actually running in your IT production environment with what should be running according to such factors as set policies and known inventory. The company doesn't focus solely on the virtual realm, but Starnes explains its technology can track multiple configurations and changes to a degree that would be needed in a virtual environment. "Virtualization really is the killer application for this type of measured systems management," he says.

Why it's worth watching: "SignaCert can ensure virtual systems are deployed as intended down to a binary level, even as system configurations are changing because of patching and updates. Since there is no configuration drift, a lot of the performance, compliance and security issues are minimized," says Jasmine Noel, principal analyst with Ptak, Noel. "Since SignaCert can deal with a change to the 'as intended' part of the system configuration, you can ensure the most up-to-date version of the virtual systems is deployed, removed or redeployed."

Where company got its name: Combines "signature" and "certification" to create a name that reflects the key technology it offers.

VKernel

Founded: January 2007

Headquarters: Portsmouth, N.H.

Management: Alex Bakman, founder and CEO, previously founded automation-configuration-management software maker Ecora Software and CleverSoft, which sold Lotus Notes monitoring software.

Funding: \$4.6 million in its first round of institutional funding, led by Hummer Winblad and Polaris Venture Partners.

What company offers: The Chargeback Virtual Appliance meters resource use by departments and automatically e-mails cost visibility and chargeback reports to users. The software comes with default chargeback rates and a calculator to help customers quickly determine their own rates. A second virtual appliance determines the capacity available for new VMs and prevents bottlenecks from occurring. "We are delivering capabilities one slice at a time," Bakman explains.

Why it's worth watching: VKernel gives customers "one virtual appliance for one problem — direct and immediate results without bringing a large, complicated suite into the IT purchasing department," says Hummer Winblad's Leckie.

Where company got its name: The idea of the kernel in an operating system being the essential component inspired company founders to create the name VKernel. ■

ONLINE: More companies

Senior Editor Denise Dubie highlights two more companies worth watching.

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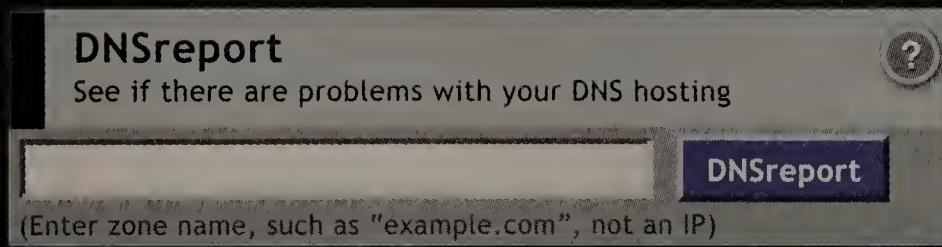
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Cell/Wi-Fi convergence paying off

BY JOHN COX

Early products and services that shift voice calls seamlessly between wireless LAN and cellular networks are proving themselves to enterprise users.

Early adopters, including those still in pilot projects, say the handoff between two, different wireless connections is generally unnoticeable and almost always reliable. These convergence capabilities also give mobile phone users at least some of the features offered by the corporate PBX, such as transferring calls or dialing a four-digit extension.

Nevertheless there are two recurring issues: the need for a pervasive WLAN designed with voice in mind, and the fact that the 802.11 radio on these so-called dual-mode mobile phones depletes batteries far more quickly than cellular radios do.

The users interviewed for this story are using two kinds of solutions for what's often called fixed-mobile convergence (FMC). One is a behind-the-firewall FMC server or appliance from a third-party vendor — from big companies such as Siemens and NEC, as well as newer, smaller companies like DiVitas Networks and Agito Networks. The server typically coordinates with a corporate IP PBX and with a client application loaded onto a mobile phone that has cellular and 802.11 radios.

The other convergence offering is a carrier service, using the Unlicensed Mobile Access (UMA) standard from the Third Generation Partnership Project to shift calls between an unlicensed Wi-Fi WLAN and a GSM carrier's licensed cellular network. In effect, these services shift the FMC server functions to a UMA controller on the carrier's network. In the United States, T-Mobile offers a UMA service to residential and business customers.

Wherever it's located, this server works with the client application to detect when a user is moving into and out of range of cellular or Wi-Fi networks. Basically, the server starts a parallel call over the alternate wireless network; when it's secured, the server mixes the audio from the two sessions and drops the first wireless connection.

The Washington, D.C.-based law firm of Orrick, Herrington & Sutcliffe has been trying out Agito's product at its four-building, Menlo Park, Calif., campus for several months with a handful of lawyers and IT staff. The technology could give the firm's 1,000 lawyers a single phone number, on a single phone, with PBX features on their mobile handsets, and

better in-building wireless coverage (via a WLAN), says Patrick Tisdale, the firm's CIO.

"We don't see this as a money-saving opportunity," Tisdale says. "We're not sure that actually happens." The value lies in being able to get calls to and from the firm's lawyers wherever they might be in the firm's buildings, all via a single device.

The Agito server coordinates with a Cisco Call Manager, and the client phones (Nokia N95s) are visible to Call Manager via Session Initiation Protocol (SIP). With the Wi-Fi interface, attorneys find they can connect wirelessly to their broadband router at home, and make a four-digit call to any extension in any of the firm's offices nationwide, says Nellis Freeman, information services manager for the Menlo Park campus.

The University of California San Francisco Medical Center is considering a wider deployment of dual-mode handsets with the DiVitas server, but the pace will depend on the gradual upgrade of the Cisco 802.11b WLAN to 802.11a/b/g, says David Sproul, manager of emerging technologies and IT capital projects for the center.

"We went with DiVitas to get seamless roaming [from cellular to WLAN] for doctors' voice calls," Sproul says. "They wanted the call to not drop when they walked into or out of the building." The hospital expects to save money on cell plans but isn't sure how much, he says. A study of cell phone use found that about 60% of the mobile calls were between medical center staff within the campus. Shifting these to run over the WLAN will save those cellular minutes.

The hospital recently added 25 handsets, in three Nokia models, to the eight previously being used, and users are clamoring for the new phones, Sproul says. The wider deployment will let the IT group get more experience in supporting and running the system, especially on the client side. Sproul says the DiVitas beta server ran for more than 18 months with no problems.

The biggest complaint has been battery life. Initially, the dual-mode phones barely got eight hours, a problem when nursing shifts are 12 hours. Nokia has made some tweaks at the handset level, and the phones now get

about 10 hours from the battery.

Handing it to the carrier

UMA-based services do away with the need for an on-site server. Instead, these functions are shifted to the UMA controller in the carrier network, acting as an interface between the IP world of a WLAN and the mobile carrier's core network. Kineto Wireless is a UMA vendor, and T-Mobile uses the gear for services like "Hotspot @Home."

One company testing out T-Mobile's UMA offering is Anthony Marano Co., a family-owned fresh-food distributor in Chicago. The company since 2004 had been using a jointly developed, dual-mode solution from Motorola, Proxim and Avaya, with dual-mode handsets, a 75-access-point 802.11a WLAN, and a SIP-based PBX with software to manage the handoff with the cellular network. In general, the systems worked well, says CTO Chris Nowak. But one problem is a wireless "speed limit": Employees zipping around the 460,000-square-foot warehouse on pallet jacks or other vehicles lost the Wi-Fi connection when they drove at more than a few miles per hour.

The company wants to upgrade, and last fall deployed a pilot WLAN from Extricom, with six antennas distributed through the warehouse, and about 50 UMA-enabled BlackBerry 8320 handsets with built-in cameras and Bluetooth, on T-Mobile's cellular network. Extricom uses what it calls a channel-blanket architecture. The 802.11 media-access-control functions run entirely on a central controller, so the "access points" in the warehouse are nothing more than antennas. There is no handoff among them because the entire system in effect works as one access point.

The sleek new BlackBerrys "see" the Wi-Fi network via a one-time scan. A user enters a key, and the device registers via IP and the Internet with the T-Mobile UMA controller. The controller "knows" where each handset is, uses the appropriate wireless connection for the voice call and shifts between them seamlessly. ■

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Addresses

continued from page 4

tities to IPv4 address space, because the Internet will run out of the available pool of IPv4 addresses before everyone makes the transition to IPv6. "We now need to talk openly in our policy development process about transfers, trading and mechanisms that will allow the Internet to continue to function as smoothly and as reliably as possible in the coming few years," he says.

APNIC and the European Réseaux IP Européens regional registry are considering changes to their IPv4 address-transfer policies that are similar to ARIN's proposal. These changes are controversial and may not be approved.

Many unanswered questions surround IPv4 address trading:

- Will it create a financial market for IPv4 address space?
- Will it delay the transition to IPv6 because more IPv4 addresses will become available?
- Will IPv4 address transfers swamp the Internet's core routers with too many routing-table announcements from ISPs?

"We don't know whether some of the side effects of such a policy make sense for the Internet," admits John Curran, chairman of the ARIN board of trustees. Curran is chief technology and operating officer at ServerVault, a Dulles, Va., managed security-services provider.

If IPv4 address trading is permitted, the probable beneficiaries are U.S. federal agencies, universities and companies that received massive blocks of IPv4 address space at the dawn of the Internet. Back then, no one realized that IPv4 addresses would become a precious commodity, so they didn't assign IPv4 addresses efficiently across their wiring closets, buildings and campuses.

Until now, these organizations have lacked a financial incentive to renumber their networks to free up IPv4 addresses. It is rare for an organization to return extra IPv4 addresses. Notably, Stanford returned more than 16 million IPv4 addresses in 2000.

With an IPv4 address shortage looming, policymakers are stepping up their efforts to recover unused IPv4 address space. This week, the Internet Corporation for Assigned Names and Numbers announced it had recovered 16 million IPv4 addresses from Net-14, which was originally used to connect older packet-data networks.

ARIN's proposed IPv4 transfer policy would provide an economic incentive for organizations to free up IPv4 addresses. "Hypothetically, a large company with excess IPv4 address space could get compensated for the work of freeing up that space," Curran says.

ARIN's proposal wouldn't allow speculation in IP addresses, as has occurred with domain names, because it requires IPv4 address space that gets transferred to be used.

No one knows if sizeable profits could be made from transferring excess IPv4 address space.

"Now we're telling people that [returning unused IPv4 address space] is the right thing to do without compensation," Curran says. "When you set up a process where an organization can be compensated so it can free up address space that others might not have, it's very hard to say how that system will actually behave."

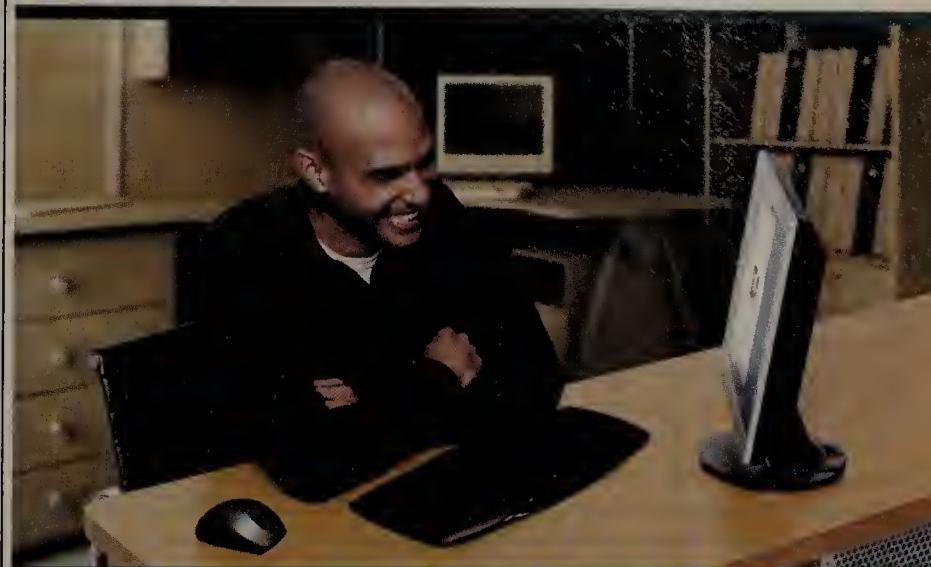
The U.S. Department of Defense, for example, is sitting on a mother lode of IPv4 addresses. Could this become a saleable asset for the department, akin to a wireless spectrum auction? Experts say that scenario is unlikely. "It's fairly difficult to imagine circumstances where the receipts for such a transfer policy would be so large as to incent someone who was using the address space to actually stop using it," Curran says.

Experts agree that allowing the transfer of IPv4 addresses probably would delay the transition to IPv6 by several more years. "One of the forecasts that's most common says that if the unadvertised IPv4 address space were somehow put back into use, that could push out the date of IPv4 address depletion by another five or six years," Curran says. "Yes, I think allowing IPv4 address transfers could move back the date for IPv6, but I don't know to what extent. It could be months, or it could be a handful of years."

Most U.S. network managers have not yet begun migrating to IPv6. At issue is how these network managers will continue to expand their networks once the unallocated pool of IPv4 addresses runs out. IPv4 address-trading may solve that problem, experts say. ■



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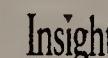
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Slow-motion wake-up call for Web accessibility



NET INSIDER

Scott Bradner

Web sites will need to be updated.

This lawsuit got its start in early 2006 when a blind University of California Berkeley student decided to sue Target because the company Web site was hard or, at times, impossible for blind people to use. The lawsuit claimed that Target was violating the Americans With Disabilities Act (ADA) and some California state laws. (The amended complaint can be found at www.nwdocfinder.com/3721.)

In September a California judge agreed that the case might have merit, in that Target's Web site might qualify as "a place of accommodation" that is covered by the ADA. The lawsuit in October 2007 was ruled as qualifying to be a class action with a nationwide class, and now the U.S. Court of Appeals for the Ninth

Circuit has dismissed Target's appeal.

The case should be back in court soon. (But remember this is "soon" by a judicial calendar that runs rather much slower than Internet time.)

Initially Target argued that the ADA only applied to physical space, and thus a Web site was not subject to the act. The judge disagreed that it was so clear-cut and did not make any final rulings, instead saying any such rules would be premature.

What will it mean to you if you run a Web site where you sell stuff to the public? How about if you are just giving away information? It is not all that clear yet. The first thing you will need is an accepted standard and a court ruling or specific guidelines saying what conformance to the standard means.

The two major standards for Web accessibility in the United States are the W3C's Web Content Accessibility Guidelines (see www.nwdocfinder.com/3722) and the U.S. Government Section 508 standards (see www.nwdocfinder.com/3723).

The Section 508 standards apply to Web sites that are run or funded by the U.S. government, and could be considered a safe harbor (if your site meets these guidelines, you should be OK).

It is harder to figure out what would be

required if you decided to follow the W3C guidelines. They are far more detailed and cover a much broader range of situations than the Section 508 standards do. The W3C Priority 1 guidelines are about the same as the Section 508 standards, and the W3C standard says these guidelines must be met if a Web site is to be considered compliant. The problem comes from the W3C Priority 2 and Priority 3 guidelines. I have not heard of any court decisions or a set of regulations that say which of these guidelines a site needs to meet to avoid being called noncompliant with the ADA.

The Target case is proceeding slowly, but still should be seen as a wake-up call for Web site operators. The handwriting is on the wall, and it seems there is no small chance that the courts will rule for the NFB; even if they do not, Congress might not be far behind in fixing any lack. Of course, there is no requirement to wait until the courts rule; it is just fine to get a start now — in fact, it just might be the right thing to do.

Disclaimer: The above is my reading of the legal tea leaves, not Harvard's.

Bradford is Harvard University's technology security officer. He can be reached at sob@sobco.com.

No subpoena? No deal, no records



EYE ON THE CARRIERS

Johnna Till Johnson

saying, "I'm so sorry, ma'am, but see those security cameras? If I don't ask you, I'll lose my job." I assured him that I fully understood (this is New York, after all), and finally produced the receipt. Arrest averted.

What's the point? I wish the carriers would be as diligent — in the opposite direction — about demanding the proper paperwork before conducting a search.

The folks at Verizon earned some (exceedingly rare) kudos in this column a while back for standing up to the Recording Industry Association of America (RIAA) and demanding subpoenas before they would release personal subscriber information. Good for them.

Better still, word is they're sticking to that position, even as AT&T is caving ignobly. AT&T recently announced it plans to monitor user communications, at the behest of the media companies, to uncover potential copyright violations.

As I've said previously, we have a legal system

I recently hit a new high in my career as suspected criminal: When I was leaving a drugstore, the security guard stopped me and asked for a receipt. Even though I'd picked the receipt up all of 10 seconds earlier, I couldn't locate it. And naturally I was wearing one of those Arctic-explorer jackets with approximately two dozen pockets (in case I should ever feel the need to stash my water bottle on my upper arm — who designs these things?)

At any rate, the poor security guard apologized profusely as I went through each pocket, but see those security cameras? If I don't ask you, I'll lose my job." I assured him that I fully understood (this is New York, after all), and finally produced the receipt. Arrest averted.

What's the point? I wish the carriers would be as diligent — in the opposite direction — about demanding the proper paperwork before conducting a search.

Enterprises face an increasingly complicated network-services landscape. Today's Ethernet options offer new managed services, greater simplicity, higher bandwidth and reduced costs. But they come at a price: a whole new set of service-delivery complexities. Learn about advanced communications services at IT Roadmap: Chicago on April 2. Qualify to attend free at:

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that's perfectly set up to address theft — suspected and otherwise. If the RIAA wants to subpoena AT&T, it can. Otherwise — fuggetaboutit. That's the position Verizon is taking (and again, good for them). Let's hope that the folks at AT&T rethink their craven perspective and grow some spine.

More broadly, all the carriers should take this opportunity to publicly announce their philosophies around the monitoring and release of customer information.

And it should be this: No paper, no deal. No matter who asks.

If the feds want to wiretap — warrant, please. And the RIAA wants to see personal information? Show us the subpoena.

That said, I'm probably one of the few folks who believes the carriers should be granted retroactive immunity for their actions immediately post-9/11, on the grounds of exceptional circumstances.

Here's the thing: Keep in mind that both Verizon and AT&T had offices in downtown Manhattan. In the immediate aftermath of the attack, their shocked and horrified executives could smell the jet fuel from the burning buildings. (It lasted for weeks.)

Nobody knew how many had died, or when the next attack would come. When the president asked for information that would help the United States track down the perpetrators, the carriers can be forgiven for taking his word that the request was fully legal.

But it's time for a line in the sand: From here on out, without a warrant or subpoena, the carriers should refuse to act.

The bottom line: It's past time for the carriers to take a stand.

Johnson is president and senior founding partner at Nemertes Research. She can be reached at johnna@nemertes.com.

Reducing MP3 copyright risks

BY JOHNNIE KONSTANTAS

MP3 music files probably take up a not-inconsiderable portion of a corporation's shared file-server resources. This not only constitutes misuse of corporate resources but also, at its worst, can expose the company to copyright-infringement violations for inadvertently housing illegally obtained MP3 files.

The challenge is in identifying MP3 files on network-attached storage (NAS) devices and shared file servers, and removing these files in a timely fashion. Because file-sharing data grows by more than 70% annually, according to analyst estimates, this type of cleanup is difficult to conduct routinely. For this reason, continuous monitoring and auditing of file-sharing data is important.

By identifying MP3 file use, businesses can reduce the risk of copyright infringement. After all, the American recording industry and its trade representative, the Recording Industry Association of America (RIAA), are targeting individuals and businesses they suspect of infringement. Consider the following:

- Last October, the RIAA won a jury trial that required a woman to pay \$220,000 in damages to six record companies because she illegally downloaded 24 copyrighted songs.

- In September, the RIAA sent "403 prelitigation settlement letters to 22 universities nationwide" concerning "evidence of significant abuse of campus computer networks for the purpose of copyright infringement" (www.nwdocfinder.com/3736).

- In December 2006 the four largest music companies accused a Russian site of copyright infringement, seeking \$1.7 trillion in damages (www.nwdocfinder.com/3737).

Fines have varied, but U.S. copyright law indicates penalties of \$750 to \$150,000 per song.

The RIAA Web site details guidelines and penalties in a section titled "The Law" (www.nwdocfinder.com/3739). Besides these penalties, any business forced to defend itself against copyright infringement will face legal fees even if the issue is resolved outside a courtroom.

Consider the example of an employee who uses the company network to store and share a collection of 1,000 songs, the equivalent of about 80 to 90 CDs' worth of music. Based on the minimum penalty of \$750, this translates to a potential penalty of \$750,000. (Note: The lawsuit the RIAA won in October 2007 placed a value of \$9,250 on each song, so the \$750-per-song estimate may be conservative.) What's more, a law firm that specializes in copyright infringement and litigation typically charges \$400 to \$700 per hour.

Monitoring data use

Until recently, continuous monitoring of unstructured-data use was impossible. The reason is that the only way to perform such an audit was to turn on the auditing function on Windows file servers and NAS devices, neither of which is intended for perpetual use and places an enormous performance burden on file servers. In fact, Microsoft warns against turning on the feature for any length of time because the maximum size of the log record can be exceeded quickly.

Further hampering the viability of data-use auditing is sorting through the log output itself. Each file access event (such as read, write or delete) can generate more than 25 system calls, or lines of information, related to a single action. This means that even if a detailed log record of unstructured-data file usage were easy to obtain, it would take days to sort through and distinguish access to MP3 files from the rest. Furthermore, it is nearly impossible to attribute this use to an individual.

Technology now exists, however, that can monitor unobtrusively all file touches — delete, open, create or rename/move — for file servers and NAS devices. In fact, file touches can be attributed to system users. This means that MP3 file accesses can be identified easily.

A report, for example, could list all MP3 files, showing where they are, their names, who is accessing them, and so forth. Sent to the right administrator, this report could lead directly to questionable MP3 files being investigated and removed, a process that addresses the risk and demonstrates that a company is making efforts to address the problem.

If, for example, an employee legally owns the songs saved on an organization's file servers or NAS devices and is the only person who accessed these files, the data-use-detail record can show that no other employees accessed the data. As part of its defense against copyright-infringement claims, a business could also use data-use detail to demonstrate how the MP3 files were used.

By adopting such technology to gain insight into MP3 files, organizations can demonstrate they are taking an active role in addressing copyright-infringement issues.

Konstantas, vice president of marketing at Varonis, can be reached at jkonstantas@varo

Detailed Access Summary

Access Path	User Name	Sam Account Name	IP Address	File Name	File Type
ONTAP_ADMIN\$\vol\vol0\Market	VRNSDEMO\Bradley Hawes	Bradley Hawes	172.17.21.8	hameea-haeirim.mp3	mp3

Detailed Access Summary report showing MP3 file accesses for a given day in April 2006.

The Business of IT

While every organization faces unique IT challenges, a core set of technology issues affect companies of all shapes and sizes. To help you deal effectively with these top concerns, Network World offers this collection of Executive Guides based on original Network World reporting, research and analysis:

- Leveraging information: IT for IT, the promise of automation
- Optimizing IT: Bigger bang for the buck
- Governance and risk management: The new security reality
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compliments of



_INFRASTRUCTURE LOG

_DAY 69: All we need is one specific piece of info. Gil almost had it, but his hand cramped. How are we supposed to find trusted business information when these massive volumes of conflicting info keep pouring in?

_Gil just grabbed a stuffed panda.

_DAY 71: The answer: IBM solutions for leveraging information. Now we can cleanse info and standardize source data fields for consistency and accuracy. I can create a single, accurate and unified record of info across our source systems. Everyone can make better decisions.

_Just in time—I think we ran out of quarters.



Information Management

Download the Innovation and Competitive Advantage white paper:
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The network is the digital nervous system of corporations today and evolving as quickly as business needs themselves. Critical new goals concern everything from optimizing resources to doing more with less and making the organization more agile, all while making IT more secure, less complex and less costly. Download these Network World Executive Guides to learn more.

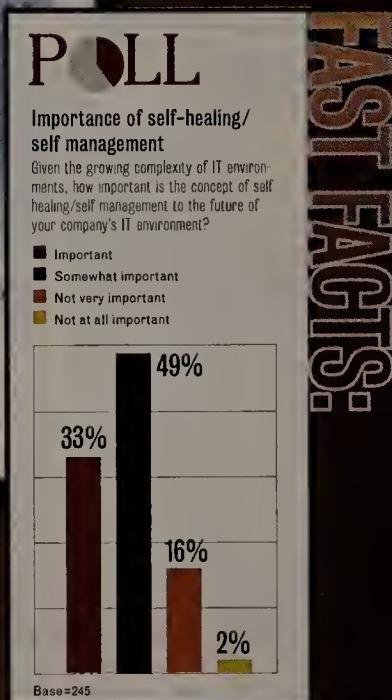
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EXECUTIVE GUIDE**

IT AUTOMATION

Tools, management software save money, increase efficiency

IBM

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Leveraging information: IT for IT, the promise of automation

The promise of IT automation has dangled in front of the industry for years, as compelling and elusive as the promise of the paperless office. While there have been some gains, the technology has delivered only basic, task-oriented functions, says David Williams, a research vice president at Gartner. Now the focus is on automating more complex, cross-domain IT processes, he says, and new tools are emerging to aid in that effort. The result: increased efficiency, faster recovery rates, fewer human-induced errors and lowered costs. An inside look at critical developments.

GOTO>> <http://www.idgtechguides.com/nwprint>



INFRASTRUCTURE LOG

DAY 89: Our power and cooling costs are out of control. We spend the bulk of our IT budget just keeping the data center cool. I told Gil we need to go green in a big way.

DAY 91: Gil took us green...kelly green, to be exact.

DAY 93: You don't go green with paint. You go green with IBM Cool Blue™ technology and energy management services. Advanced server and storage virtualization can help consolidate our boxes to lower energy usage. And the new IBM POWER6™ systems help us use less energy doing the same amount of work.¹

Our data center will be green now. And painted white.



Learn how to make your data center more efficient:
IBM.COM/TAKEBACKCONTROL/GREEN

Optimizing IT: Bigger bang for the buck

IT consolidation efforts, coupled with technologies such as virtualization, storage-area networks, blade servers, grid computing and Linux, are coalescing into a potent mix that can help companies begin to restore the balance of capital expenditures to operating expenditures. Today, after all, it isn't uncommon for companies to be spending 80% of their IT budgets on the latter, leaving precious little to invest in new technology that will move the cause forward. A look at the core technologies making it possible.

GOTO>> <http://www.idgtechguides.com/nwprint>

FAST FACTS:

POLL

Planned Data Center Investments

Which of the following areas does your organization plan to make substantial data center investments within the next three years?

	% Responding
Server virtualization (VMware, Xen, etc.)	64%
Storage virtualization	42%
Blade servers	37%
Open source tools	29%
Grid computing	11%
None of the above	15%

Base=245 Multiple responses allowed

Source: NetworkWorld

NETWORKWORLD® EXECUTIVE GUIDE

OPTIMIZING IT: Bigger bang for the buck

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GUIDE TO GOVERNANCE AND RISK MANAGEMENT: The new security reality

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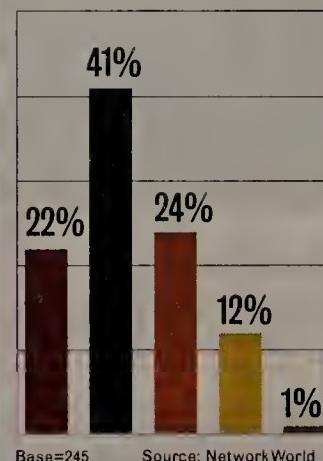
FAST FACTS:

POLL

Influence of Compliance on Security Issues

Compliance is driving security issues that:

- We were going to do anyway
- We might have undertaken anyway
- We probably wouldn't have gotten around to
- We don't really need
- Other



Governance and risk management: The new security reality

While the government now mandates compliance with a range of security practices, big business doesn't need the reminder. Breaches cost millions of dollars, jeopardize the brand and have even put some companies out of business. Compliance is the law, but sound security is now a corporate requirement. An examination of the tools companies are bringing to bear to mitigate risk, comply with government regulations and keep the bad guys at bay.

GOTO>> <http://www.idgtechguides.com/nwprint>



INFRASTRUCTURE LOG

DAY 84: Feeling really disconnected. We're not getting the most out of our existing assets. Service and application integration is a nightmare. We've got to stop working on these islands.

Please rescue me from this lack of connectivity.

DAY 87: We're saved! With IBM WebSphere solutions we can service-enable and connect our existing assets for mission-critical goals. Now we can reuse existing applications and save money by eliminating redundant systems. We're ready for any SOA integration project.

Plus, no more jellyfish stings.

WebSphere®

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EMPOWERING PEOPLE:

The electronic team

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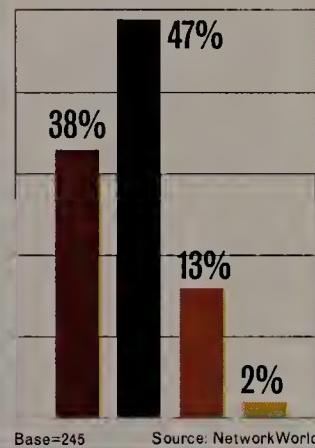
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POLL

Importance of Collaborative Technologies

How important are new collaborative technologies to your company's future productivity goals?

- Important
- Somewhat important
- Not very important
- Not at all important



FAST FACTS:

A host of Web 2.0 and other collaboration tools is making it possible for workers stationed at remote company sites and within partner and customer organizations to work to a single end. Tasks are no longer bounded by who can be ushered into what conference rooms at an appointed hour. Now it is possible to stitch together teams on the fly by quickly ascertaining who is available, who has what knowledge of an issue and who can access what communications capabilities. A look at how companies are empowering their front-line teams.

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Enabling business flexibility: Agility breeds success

Business is becoming less predictable, cycles are getting shorter, margins are getting squeezed and globalization is changing the playing field. Many companies will survive this perfect storm, but only the agile will thrive, and IT is the key enabler. An inside look at the technologies that companies are pursuing to ensure they stay fleet of foot.

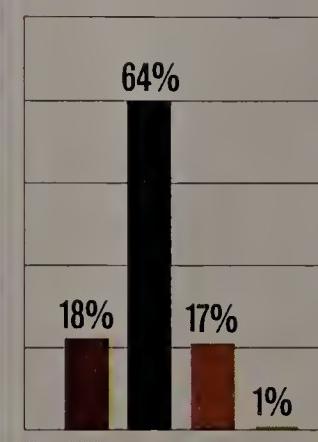
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POLL

Consideration of agility in IT planning

In terms of IT planning, agility:

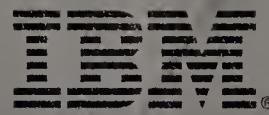
- Is core to everything we do
- Is a key consideration
- Is rarely considered
- Has nothing to do with IT planning



FAST FACTS:

ENABLING BUSINESS FLEXIBILITY: AGILITY BREEDS SUCCESS

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_INFRASTRUCTURE LOG

_DAY 82: There are so many risks out there. Traffic spikes, natural disasters, mergers. How do we prepare? One in three companies don't recover from unplanned downtime.¹ Would we?

_Gil wrapped everything with bubble wrap. Just to be safe.

_DAY 83: I'm preparing with IBM Business Resilience Solutions. IBM Business Continuity Services help us assess our risks and design a proactive plan to deal with them. IBM Tivoli gives us the visibility to diagnose and fix infrastructure problems. And the robust availability features of the IBM System p™ give us maximum uptime.

_No more bubble wrap. And I have to mail a package. Great.

Tivoli.

Take the business continuity assessment at:
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Wrapping up the e-commerce saga

GEARHEAD

Mark Gibbs

Over the last few weeks I've been discussing my problems getting an e-commerce site going for my wife's small company, and many of you have written in with thoughts and observations. Here's a selection of the feedback. Manish Jha wrote about one of the first columns in the series saying I try Quickbooks Merchant Service for credit card processing.

I did use Quickbooks Merchant Service, and it works fine. The problem that tripped me up was that transactions for that card that are passed through the Quickbooks service will fail until you establish an American Express Merchant Account. Quickbooks Merchant Service acts as the credit card processing back end to the Network Solutions e-commerce services, and the error message for this problem is unhelpful.

Following my comments about the problems with customizing ProStores, one of the e-commerce services recommended by Intuit (the publishers of Quickbooks), Kurt Davey, the president of Neoverve, a Master ProStores Reseller, said: "Customizing any eCommerce application is difficult for the majority of merchants to achieve. Providers who advertise their platform as a Low Cost, Do-It-Yourself application are simply unable to support customizations. They don't have professional designers and developers on staff to support users who wish to customize. They have extremely high customer churn rates for the exact reasons you cited."

That's my point! These e-commerce service providers all oversell and under-deliver. Their one-size-fits-all solutions are fine as long as you don't mind looking and working within narrow limits that are actually too narrow for anything but the most simplistic commercial purposes.

Lin Shearer, who works in ProStores Marketing, also sent me an e-mail

regarding my comment that ProStores support said it would not support sites customized at a low level: "To address your experience with our tech support — I think what they meant was ... if you do your own custom coding and make certain changes, you might break your store if you don't know what you're doing — and we do not provide tech support to help you fix the code. Seems a little silly I agree." Do I need to point out the weakness of this argument?

Shearer pointed out that the documentation needed for customizing is available but you have to go to the ProStores Designer Certification site to find it, and the documentation is all in Flash or Windows Media video format. So, why is it not written down? I can read faster and retain more information than those turgid videos can deliver. And where's the reference manual for the customized tags that ProStores uses? How can you pretend to be for professionals when you have no documentation?!

Many of you wrote in recommending other tools. Colin Quarello suggested using ZenCart, "an osCommerce branch project that includes a lot of additional features out of the box", while Curt Akin offered LiteCommerce.

Robert Thomas said, "Almost every 'solution' that I have investigated has a learning curve and does not have all of the desired features out of the box. Many add-ons are required to make things 'user friendly'."

Thomas recommended CMSimple and suggested the associated Quick Cart e-commerce solution.

I've been taking a look at content-management systems and this one looks pretty interesting. There may well be a Gearhead on the topic in the near future so tell me what you're using. Looks like I've got my homework cut out for me. Next week, something different. Completely.

Gibbs slaves over a hot browser in Ventura, Calif. Send your links and thoughts to gearhead@gibbs.com.

Everyone's got iPhone and Android envy

Two notable trends emerged from last week's Mobile World Congress 2008 show in Barcelona. First, manufacturers are coming out with iPhone-like touch-screen devices, and second, everyone is eager to see what the Android phones will look like.

The latest entrant in the "we're just like an iPhone" game is a partnership between Sony Ericsson and Microsoft with its Xperia X1 device, which runs the Windows Mobile operating system and features advanced mobile Web connectivity (it supports Wi-Fi, Bluetooth and the advanced HSDPA/HSUPA wireless networks). The 3-inch-wide touch screen has VGA resolution, a 3.2-megapixel digital camera, music player, FM radio and a full keyboard that slides out in an arc from underneath the display. Sony Ericsson said the phone would be available in the second half of 2008.

Other touch-screen models from Sony Ericsson included the G700 and G900 models, which aim to bring touch-screen devices to the mainstream. The G700 includes touch-controlled Notes applications that allow users to write and draw memos with their fingers, a 2.4-inch display and 3.2-megapixel digital camera. The G900 includes a 5-megapixel digital camera, 2.4-inch screen, embedded Wi-Fi for Internet access and touch-enabled media player. The phones support the UMTS 2100 networks, and will be available in selected markets (European first, most likely) in the second quarter.

Another impressive cell phone model was Samsung Electronics' Soul phone, the latest model in its Ultra edition series. The Soul is a slider-type handset with a touch panel under the display. The panel

shows navigation icons that can change according to the current application running on the handset. For instance, when in camera mode the phone displays zoom and brightness icons, with music-player icons appearing when the phone is in music mode. The GSM-based handset operates over HSDPA, features Bluetooth 2.0, has a 5-megapixel digital camera, FM radio and Radio Data System support. The phone is being marketed toward European customers for availability in April.

While there weren't any official phones with the Google Android software platform, several chip manufacturers were showing off prototypes and proof-of-concept phones at the show. Freescale, Marvell, NEC Electronics, Qualcomm and Texas Instruments (TI) were showing off various devices with what an Android phone might look like later this year.

Because TI only makes chips, representatives said their prototype would just be an example of what a finished Android phone could look like, leaving development of the hardware and software interface to others.

The Bluetooth Special Interest Group (SIG) announced it was developing "a method of radio substitution" that would let Bluetooth protocols, profiles, security and pairing be used in devices while getting faster throughput from temporary use of a secondary radio already in the device. The Alternate MAC/PHY architecture will take a two-phased approach as Bluetooth SIG members drive the specification forward, the SIG said. The goal would be faster transfer of large-format data, such as music and video, over the faster connection but still utilizing the Bluetooth protocols.

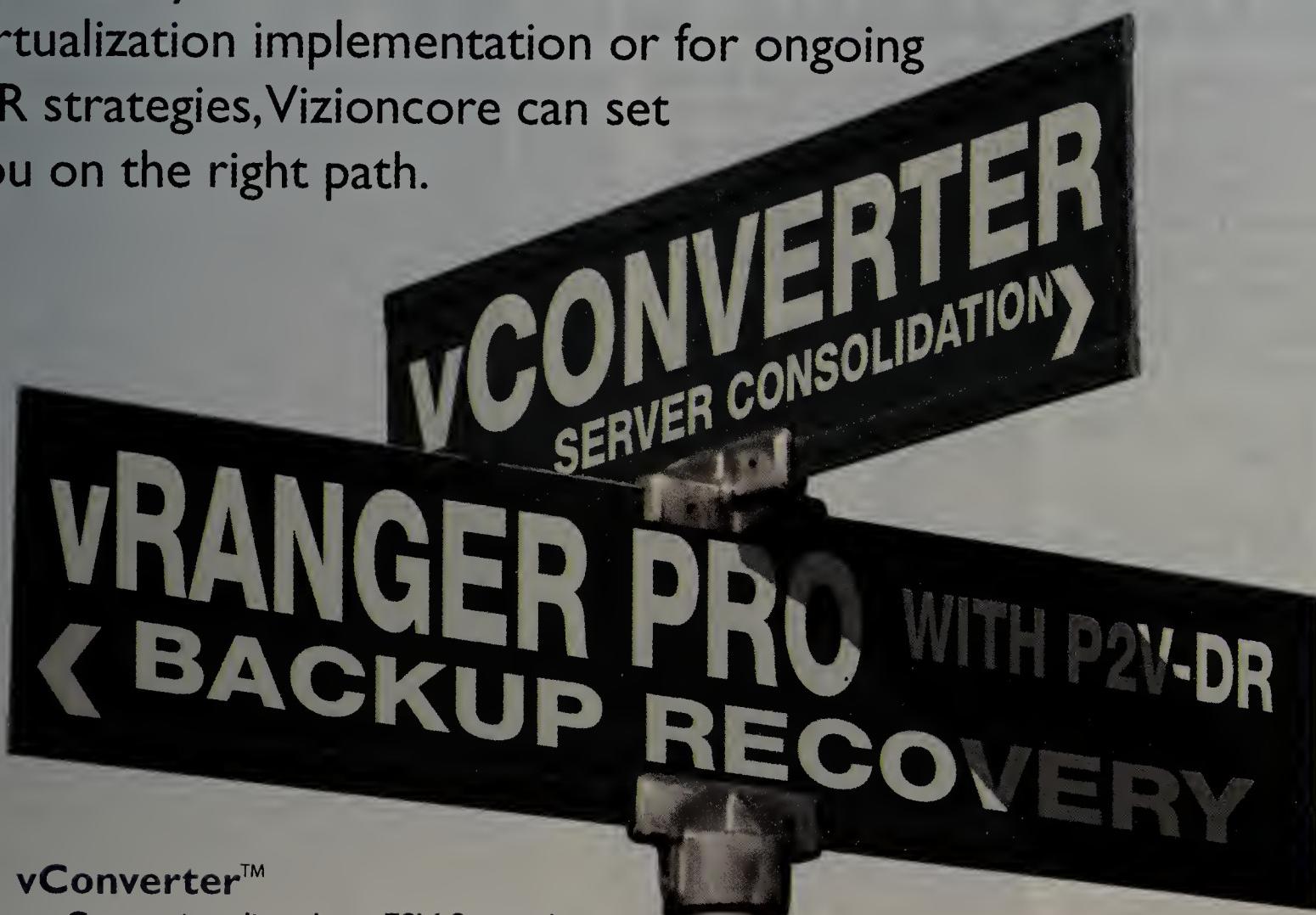


Sony
Ericsson's
Xperia X1

The IDG News Service contributed to this report.

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THE NEW DATA CENTER

STRATEGIES AND TECHNOLOGIES FOR OPTIMIZING IT.

The first installment of the 2008 New Data Center series looks into one of your biggest problems: powering the data center. Today, IT equipment typically accounts for one-third of a data center's overall power needs; the rest comes from the power and cooling infrastructure needed to keep that gear running smoothly. Now the industry is waking up to this harsh reality: Power is expensive. How well do you understand the problem?



Power: the cost reality.
At right

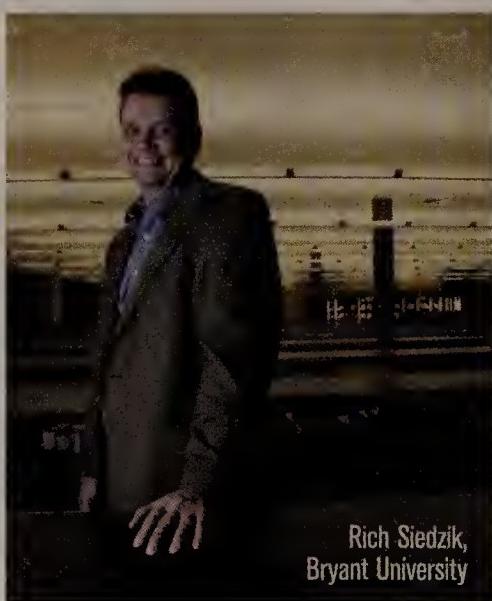
Two ways to measure power consumption. 38

Five ways to ease the power problem.
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Where to turn for advice about data-center power. 42

Cool school: A look inside Bryant University's energy-efficient data center.
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A future look at data center power. 46



Rich Siedzik,
Bryant University

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over the cost reality

U.S. data centers rack up billions in electricity costs annually. Get power costs under control before the energy crisis hits you.

BY CAROLYN DUFFY MARSAN

Adam Gray, CTO of Novacoast, isn't responsible for the power and cooling costs of his company's two data centers, and he isn't too worried about the effect of escalating energy prices on his IT operations. Novacoast is a Santa Barbara, Calif.-based IT professional services firm with 100 employees and 17 locations.

"California, where our primary data center is located, has pretty well stabilized power costs in the last few years, so we haven't seen any big increases," Gray says. "We have an infrastructure in place to grow without having to add a lot of servers. [Power costs] are not a major driver for us."

One reason Gray isn't too worried about power costs is that Novacoast recently finished a server virtualization effort, migrating from 25 1U servers to two blade servers. Now Novacoast can turn up virtual servers in minutes to support software development efforts for its clients. Virtualization also has reduced the firm's monthly electric bill by a few hundred dollars.

Gray says he'd pay more attention to energy use if his electric bill was higher. That's the reason he hasn't factored energy efficiency into his ongoing evaluation of servers from Dell, HP and IBM.

"Energy efficiency is not a priority," Gray admits. "Our priorities are support, hardware replacement, mean time between failures, cost and reliability. The power consumption cost is a very small percentage of our IT costs. But if we lost a server, that would be catastrophic. Energy efficiency is important, but it doesn't make our top five."

Gray is not alone. Most IT executives haven't focused on their IT equipment's power costs, and they aren't taking energy efficiency into account when they choose servers, storage devices or network gear.

In a recent survey of 590 *Network World* readers, 68% of respondents said they were not responsible for power bills related to their data center's IT equipment, and only 21% had established an ongoing dialogue between IT staff and facilities management personnel.

A majority of IT executives — 51% — don't consider energy efficiency in IT product evaluations, the survey found. In addition, more than 50% of the respondents failed to take the most obvious steps to reduce IT power

consumption, such as removing servers no longer in use. The e-mail survey was conducted in November 2007.

This lack of interest in IT power costs appears to be changing, particularly at Internet companies, financial institutions and leading-edge retailers.

More IT executives are coming to grips with a grim reality: Data-center power and cooling costs are the hidden enemy of IT departments. They creep up on unsuspecting CIOs like deadly mists and choke off their ability to deploy new equipment and applications.

"If a CIO has not had to build a new data center recently, this is likely to be a huge surprise," says Ken Brill, founder and executive director of the Uptime Institute, which provides consulting services to more than 100 data-center operators.

"Oftentimes, the people who pay the power bill aren't in the IT department, they're in the facilities department. Where it shows up is in the capital cost for the data center," Brill says. "This all happens invisibly until you run out of capacity."

CIOs who get data-center power and cooling under control can reduce IT operations costs significantly, bolster corporate profits and gain a strategic advantage over their competitors, experts say.

"There's a huge opportunity here. By looking at efficiency and improving your operations, you can substantially reduce the cost of your data center," says Christian Belady, principal power and cooling architect for Microsoft's global foundation services. "As IT operations become a bigger piece of the cost pie, how well businesses manage their operations and how efficiently they run their data centers could be the difference between making money and not making money, between having a lower cost structure than competitors and beating them on Wall Street or not," he adds.

The data-center power problem

The cost of a data center's power and cooling typically is more than the cost of the IT equipment inside it, experts say. That's because today's IT systems — including servers, routers and network-attached storage — pack more transistors on each chip and more power-hungry chips in the same or smaller footprint.

"When you buy computer equipment, it comes with an embedded level of power consumption," the Uptime Institute's Brill explains. "Let's say you spend \$10 million a year on hardware. The same \$10 million that you spend today will bring with it 10 to 15 times the power consumption it did in 2000."

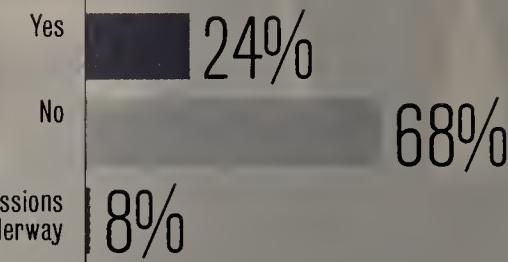
Meanwhile, companies are demanding more compute cycles, and that forces them to add servers. Although today's servers are more energy efficient than earlier models, improvements in energy efficiency haven't kept pace with increases in computational performance, experts say.

Today's IT hardware requires more UPS,

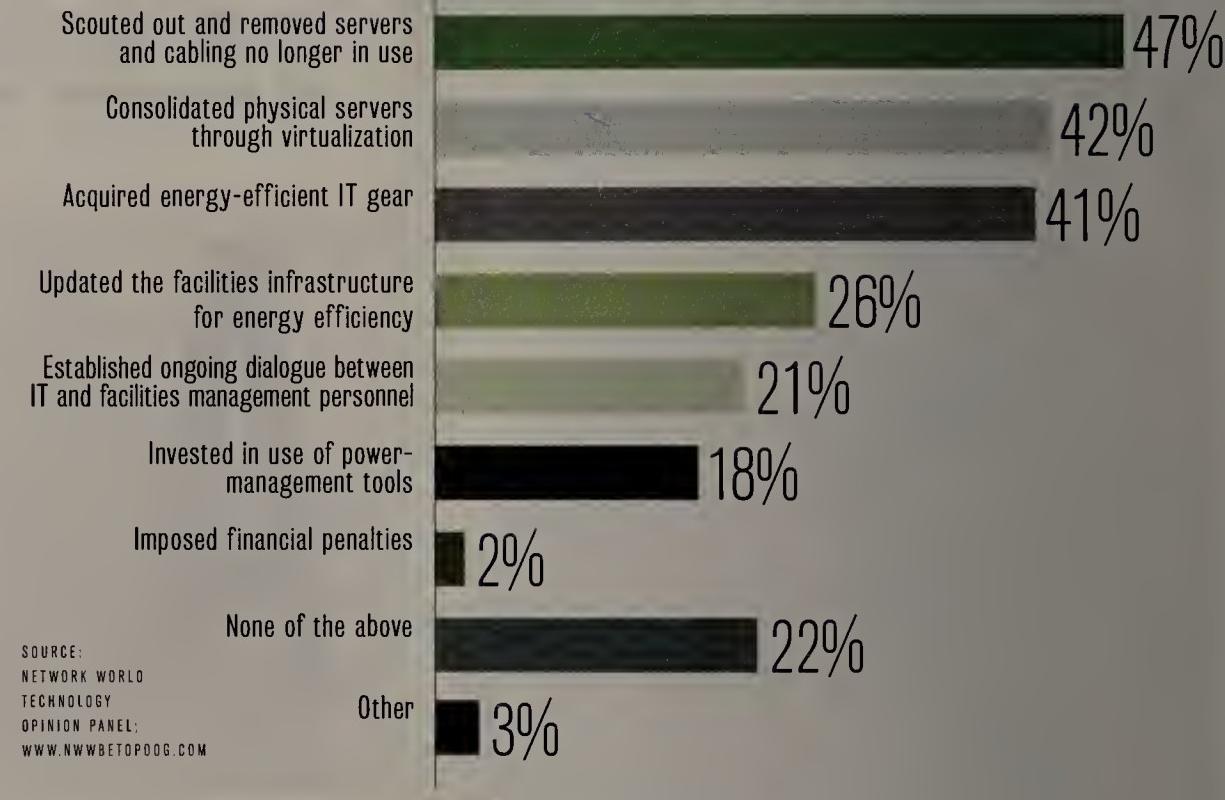
The data-center power problem and you

The results of a recent survey of 590 readers indicate that most IT professionals aren't fully aware yet of the looming data-center power problem. Those who are aware say they're taking basic steps, such as removing unused servers and cabling, to make their data centers more energy efficient.

IS IT RESPONSIBLE FOR POWER COSTS?



STEPS TAKEN TO REDUCE IT. POWER CONSUMPTION



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TECHNOLOGY
OPINION PANEL:
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generator, air conditioning and power-distribution capacity than in the past. That's why IT executives looking to deploy servers often are surprised to find out that they have run out of space, power or cooling capacity in their data centers.

"The average CIO is only marginally aware of his electricity bill but is keenly aware of the powering and cooling limitations in his data center facility," says Carl Cottuli, vice president of American Power Conversion's (APC) Data Center Science Center. "Over the last couple years, this issue has really come up to the front seat. It's always been there, but it was less of a concern than other issues on an IT manager's desk. Now it has a direct impact on the ability to deploy enterprise-class servers, and it's driving virtualization and consolidation efforts."

CIOs who aren't managing their data-center power and cooling capacity can get caught off-guard. "I have seen IT managers who weren't able to roll out new equipment [they have

ready to plug in] because they had no available power or cooling," Cottuli says.

Part of the problem is that most data-center operators aren't measuring or tracking the energy efficiency of their buildings. The Green Grid, an IT industry consortium, has come up with two new metrics — Power Usage Effectiveness (PUE) and Data Center Infrastructure Efficiency (DCIE) — to measure how well a data center manages the power and cooling overhead required by its IT equipment. At this point, however, only a handful of data center operators use these metrics, experts say (see "Two ways to measure power consumption," page 38).

"You can't improve it if you don't measure it," Microsoft's Belady says. "For years, I went around talking with various customers about best practices. When I visited them a year later, they hadn't changed a damn thing because they couldn't quantify the benefits."

In 2007, however, companies started getting

pressure from boards of directors and shareholders to reduce energy use and become more "green." As soon as companies take a look at their electricity bills, they figure out that their data centers are their heaviest users.

"The data center consumes up to 40 times more power per square foot than anything else in the asset portfolio. When you do an energy audit, this is going to jump out," the Uptime Institute's Brill says. "For a large company, hundreds of millions of dollars could be saved over 10 years by taking steps to make data centers more energy efficient." (See "Chill out: Five ways to ease the power problem," page 40.)

The data-center power problem is serious

enough to attract attention from policymakers. Between 2000 and 2006, the amount of electricity consumed by U.S. data centers doubled, and it is projected to double again by 2011, according to a U.S. Environmental Protection Agency report (www.nwdocfind.com/3821) to Congress last summer on data-center and server efficiency. The EPA estimates that data centers consumed about 61 billion kilowatt-hours of electricity in 2006, which cost \$4.5 billion and represents 1.5% of the total bill for electricity used in the entire United States.

IT-related energy use is becoming a higher priority for CIOs for two reasons: rising electricity costs and pressure to reduce the IT carbon

footprint, says Jack Pouchet, director of energy initiatives at Leibert, a leading provider of data-center cooling systems.

"If the cost of electricity went down to 3 cents a kilowatt-hour, the cost concern goes away. Then it's a question of best practices. People don't want to waste money ... and build a data center that's twice as big as they need because electricity is cheap," Pouchet says. "But CO₂ — the green issue — that is on everybody's radar. That issue doesn't appear to be going away."

Testing for energy efficiency

Attacking the data-center power problem starts with buying energy-efficient IT hardware, power and cooling equipment.

"There is energy-efficient hardware out there, but it costs more," the Uptime Institute's Brill says. "All the manufacturers tell us that their energy-efficient hardware isn't selling."

State Farm Life Insurance in Bloomington, Ill., is one of the few companies to take energy efficiency into account when it purchases servers, PCs and other network gear. The company's facilities team has set up a laboratory, run in conjunction with the IT department, for testing power consumption of all the systems going into its data centers. It prefers testing the equipment itself to relying on vendor-provided energy-efficiency statistics, which have proved inaccurate, says Ron Kalley, the company's director of facilities. "The only way for us to figure out which server or PC is more energy efficient is to put it in our own shop on our network, and to test that component in the way we're going to use it to see what it does for us," he says.

Last year, for example, State Farm tested power supplies as part of its procurement of 200,000 workstations. The company found that if it spent \$15 more per workstation on a more efficient power supply, it would earn back that investment in the first year with reduced energy costs.

"We've gotten folks to [understand] that if we do our due diligence and look at the power consumption of equipment, we can save money overall," Kalley says. "Our workstations are on a three-year rotation, so for years two and three, the power is basically at no charge."

State Farm has tracked its IT operations expenses since it unexpectedly ran out of capacity in one of its data centers in 2004. The company runs data centers in Bloomington, Atlanta, Dallas and Phoenix.

"In 2004, we started recognizing the associated costs of the IT capital spend," Kalley explains. "This was really a catalyst for us to start thinking more clearly about what we needed to do to manage [capital expenditures and operating expenditures]. We needed to get more proactive at looking at life-cycle costs."

State Farm's initial focus was on better managing data-center capacity to make sure it wasn't caught flat-footed again. Now the company

See Power costs, page 36

"We've gotten folks to [understand] that if we do our due diligence and look at the power consumption of equipment, we can save money overall."

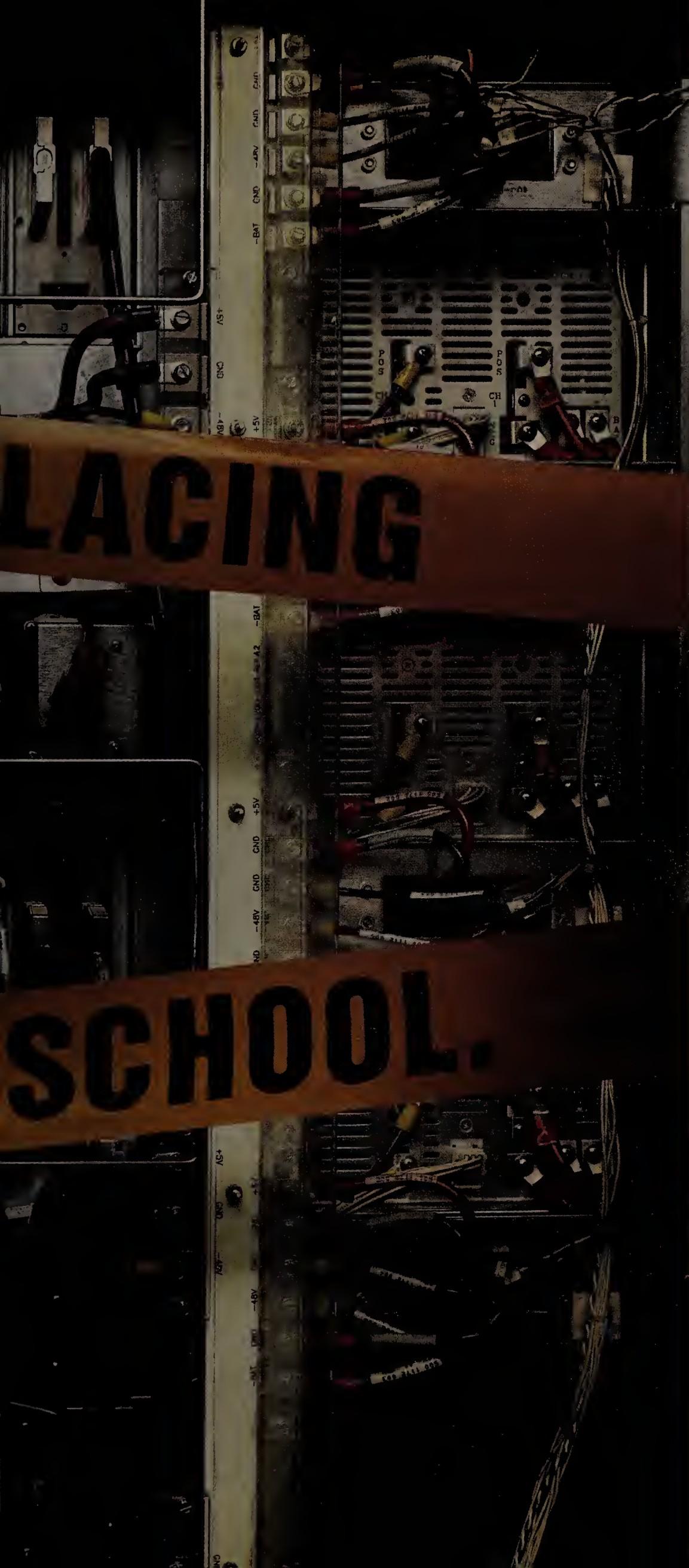
— RON KALLEY, director of facilities, State Farm

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Power costs

continued from page 33

plans its data-center capacity at least 24 months ahead of time so the facilities team can meet the needs of the IT department.

"Around 2005, 1U, 2U and 3U servers were becoming commodities, and people were buying them like M&Ms," Kalley says. "IT folks were buying as many as they could at the lowest cost, but they weren't looking at the power supplies. We had to find a way to stem this tide."

In its laboratory, the facilities team tests not only the power consumption of equipment headed for its data centers but also its performance and reliability. Among the equipment tested in the lab are PCs, servers, power distribution units, static transfer switches, network equipment and storage devices. Still, measuring energy savings from the test lab is hard, Kalley says. "All the time we're trying to drive kilowatt consumption down, the price of energy is going up. I think the benefit is in cost avoidance rather than cost savings."

One advantage for State Farm in attacking data-center power consumption is the close working relationship between facilities and the IT department. The facilities group shares the data-center electric bill with the IT group, and the two partner on testing, procurement and other activities. As director of facilities, Kalley spends half his time working with the IT department.

"It's not just energy consumption. The other thing we're trying to do [with the IT department] is socialize the understanding that capacity is not infinite," Kalley says. "We've been trying to manage our consumption to the best of our ability so we can [wait] four, five or six months before we have to spend multimillion dollars on an upgrade to one of our facilities. That's the cost-avoidance piece."

Companies that manage data center capacity well will end up meeting corporate carbon-footprint requirements, too, Kalley says. "At State Farm, the energy spend for our data centers is 25% of our entire real estate portfolio," he says. "Everybody is talking about going green. I'm just talking about hard-nosed, efficient operations. If you do that, you'll be green."

Focus on metrics

Data-center operators must start measuring and monitoring data-center power use in real time, experts recommend.

One key measurement is The Green Grid's PUE, which shows the ratio of the power used by a data center's IT equipment to the power used by its power and cooling systems. (DCiE is the reciprocal of PUE; it shows the amount of power going to IT equipment as a percentage of the total power going into the building.)

Data center operators should aim for a PUE of less than 2 and ideally as close to 1 as possible, experts say. In other words, if you

need 1,000 watts of power for your IT equipment, your data center should require no more than 2,000W overall.

Wachovia, the nation's fourth-largest financial institution, has a high-end data center in Birmingham, Ala., that operates at a PUE of 1.6. "We're in the stage of designing new data centers, and we're trying to get the PUE down to 1.4," says Bob Cashner, senior vice president of corporate real estate for Wachovia, in Charlotte, N.C. "Ideally, we would get that number down to 1. We're aiming for that. We're trying to do things that get our PUE lower and lower."

For the Birmingham facility, Wachovia used the most energy-efficient UPS systems, generators and chillers available at the time, Cashner says. "We look at the lowest long-term owning and operating costs. You can spend a few more dollars on Day 1 and do things that will save you money long-term."

Wachovia is using virtualization in the data center to reduce the number of servers it needs, replacing 16 individual servers with one virtualized server.

For its next data center, Wachovia is considering using DC power for its IT equipment rather than the traditional AC. This would eliminate the need to deal with the "transformation losses of the UPS systems," Cashner says.

One reason Wachovia is a leader in data-center efficiency is that the facilities and IT departments work closely together. "One of the things we've done for years is to get around the table all the subject-matter experts — risk, security, technology and corporate real estate — so we can come up with the best solution that balances all the different factors," Cashner says.

This relationship will be important in the future as data-center costs continue to rise. For example, Wachovia's 225,000-square-foot Birmingham building, which opened in 2006, cost \$112 million. If it were to be built today, the same building would cost \$182 million, Cashner says.

"One of the things Wachovia has done really well is capacity planning," Cashner says. "We have a better idea of what the load growth is in our mission-critical data centers by having a good pipeline of what's coming down the pike in the business units. This lets you have new data centers come online just in time. It takes a good working relationship among the different stakeholders."

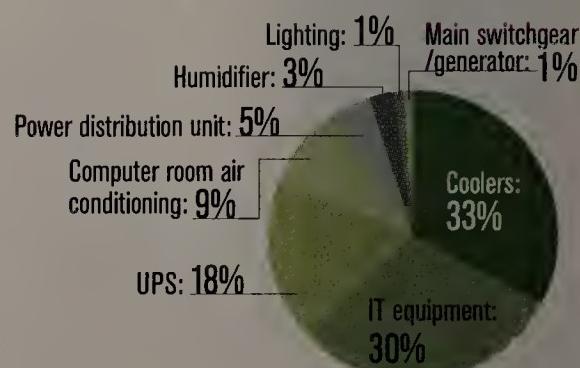
Interest in data energy-efficiency is at the "highest levels" within Wachovia, Cashner says. "We have a commitment from our CEO on down that we are going to be a green organization. We have a laser-beam focus on energy efficiency, and we've had that for a long time."

The power risk for CIOs

Companies that don't measure and improve data-center efficiency as Wachovia

+How data centers use power today

IT equipment consumes about one-third of the electricity required by a data center. The rest of the energy overhead comes from the associated power and cooling infrastructures. Here's a typical breakdown:

**+Why data centers need to go green**

Data centers are huge consumers of energy and other raw materials. Here's a breakdown of typical consumption numbers for a one-megawatt, high-end data center over its 10-year life:

- 177 million kilowatt-hours of electricity
- 60 million gallons of water
- 145,000 lbs. of copper
- 21,000 lbs. of lead
- 33,000 lbs. of plastic
- 73,000 lbs. of aluminum
- 12,000 lbs. of solder
- 377,000 lbs. of steel
- 32 million kilowatt-hours of primary energy

+Five data-center design elements that will give you an edge

Improving your power and cooling infrastructure can boost the overall energy efficiency of your data center by 25% to 50%, experts say. These data-center design elements will prove advantageous:

1. Ultra-high-efficiency UPS.
2. High-voltage AC power distribution.
3. Close-coupled cooling.
4. Scalable power and cooling equipment.
5. Power and cooling capacity planning and management software.

See Power costs, page 38



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and State Farm have done risk losing their competitive edge, experts say.

Companies that don't improve data-center efficiency are "going to go out of business because the cost per transaction will be prohibitively expensive for them compared to the competition," Liebert's Pouchet warns.

Noting that the U.S. Green Building Council soon will be rating data centers, Pouchet predicts companies will be out of favor unless their data centers are rated silver, gold or platinum. "People will start using data-center ratings as a metric to get your business. In one to three years, this is going to be something on people's business cards: We run a gold-certified data center."

The data-center power and cooling problem is going to get worse before it gets better, experts say.

The Uptime Institute's Brill estimates that the cost of providing power and cooling to data-center equipment is now one and a half times the cost of the equipment itself over its lifetime. "I see it growing to three times or four times," he says. "The problem is that the growth is invisible until the data center runs out of capacity."

CIOs who think they have solved the data-center power and cool-

ing problem through server virtualization are wrong, experts say. Virtualization is a one-time fix. It can help you delay dealing with data-center efficiency, but it won't fix the problem forever.

"Virtualization will get energy costs below the threshold for a while, but it will pop up again," Microsoft's Belady says. "Virtualization buys you time, but after that virtualization won't give you more energy efficiency."

Data-center operators who can figure out how to eke out more efficiency from their facilities continually are going to be an asset to their employers, experts say.

"The efficiency methodologies enable you to get more compute capability out of the same kilowatts," APC's Cottuli says. "A business manager may need 5,000 transactions per second. If the data center manager can put in some efficiencies, such as better cooling or virtualization, and give the business manager the extra transactions with the same amount of kilowatts, that's a win-win."

The data-center power and cooling problem "fundamentally changes the underlying economics of IT," Brill says. "CIOs who don't adapt to this new math could make profound investment mistakes." ■

Two ways to measure power consumption

BY CAROLYN DUFFY MARSAN

Two metrics are emerging as industry standards for measuring data-center power consumption: Power Usage Effectiveness and Data Center Infrastructure Efficiency.

Both metrics are backed by The Green Grid, an industry consortium formed last year to develop standards for measuring data-center efficiency and productivity (see "Where to turn for advice about power," page 42). These metrics are used to compare the amount of electricity the data center consumes for power and cooling with the amount of power used by the data center's IT equipment.

"Site infrastructure overhead is a simple concept," says Ken Brill, founder and executive director of the Uptime Institute, which provides consulting services to more than 100 data-center operators. "It's easy to measure and captures everything."

Here's how The Green Grid defines these two metrics for measuring data-center infrastructure overhead:

1. PUE = Total facility power

IT equipment power

PUE is a ratio. It should be less than 2; the closer to 1, the better.

2. DCiE = IT equipment power x 100

Total facility power

DCiE is a percentage. The bigger the number, the better.

"The word about these metrics is really getting out into the community," says John Pflueger, technology strategist at Dell and a member of The Green Grid's Technical Committee. "These metrics have been discussed in some of our meetings in Europe. Policymakers at the U.S. Environmental Protection Agency and the Department of Energy are very aware of these metrics."

A lot of work remains, however, to document ways to collect power-consumption data and to apply these metrics so they can be used to compare the efficiency of data centers in different organizations, Pflueger says.



BRIAN STAUFFER

This year, The Green Grid will be working on productivity metrics. In particular, the group is interested in measuring the useful work coming out of a data center.

"This is something that people have been looking at in our industry for a while. It's a hard problem," Pflueger says. "One of the reasons why this is such a hard problem is that what counts for useful work at an [Advanced Micro Devices] data center might not be the same thing as useful work in a Dell data center."

The Green Grid ultimately hopes to come up with a metric — like miles per gallon for automobiles — for data centers.

"As our metrics evolve, they'll become more accurate and the number of things you'll be able to do with [them] will increase," Pflueger says. "You'll be able to make more finely granular decisions using these metrics."

Members of The Green Grid predict their PUE and DCiE metrics will be built into network management, operating-system and other software for real-time measuring and monitoring. "It's going to be real interesting to see who picks up on our models and figures out how to make a buck on them," says Larry Vertal, senior strategist at AMD and a member of The Green Grid's board of directors. ■

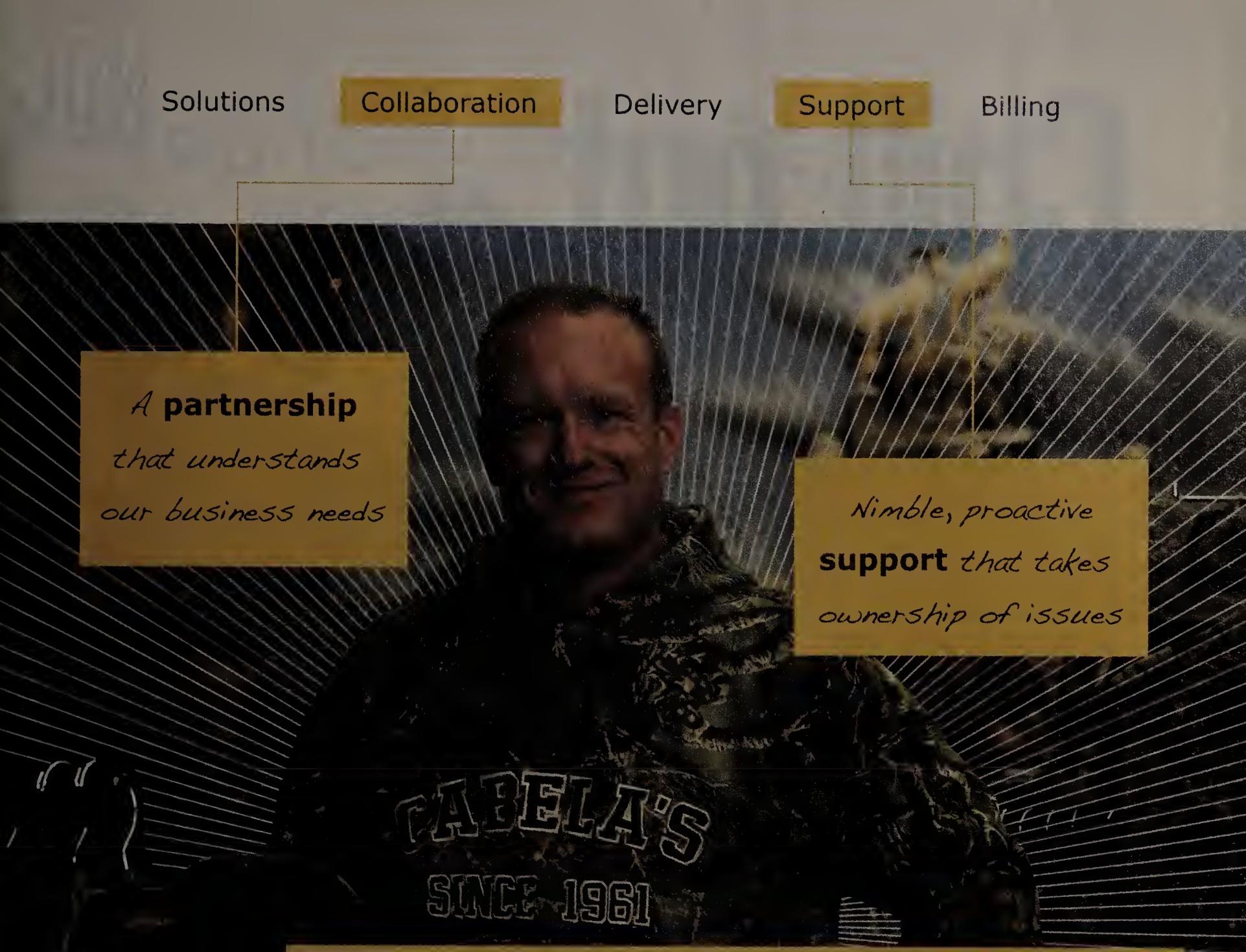
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Chill out

Five ways to ease the power problem

BY DENI CONNOR

Cutting back on the amount of power a data center consumes isn't necessarily tricky, but it does require a holistic approach that considers the IT, cooling and power infrastructures. As Kfir Godrich, CTO for EYP Mission Critical Facilities, a data center consultancy, says: "If you are not looking at your data center from the utility input down to the chip, and then back to the power and cooling, you are missing the target." These five tips — some for the here and now and others for longer-term strategizing — will help you curb power use in the data center.

1. Don't overlook the obvious

Seal holes in the raised floor left by equipment that's been moved or uninstalled. Install blanking plates in empty portions of racks where network gear or servers ordinarily would go. Relocate perforated floor tiles from hot to cool aisles. Enable the energy-saving features of servers and computers. If possible, turn off the lights in the data center.

Such efforts can help offset rising utility rates, users say. Facing rising rates, "we replaced our old monitors with Dell Energy Smart LCDs; we turned on all the energy-saving technologies in the PCs that power down drives and put them in sleep mode; [we changed out] any printer that didn't support power-save functions," says Tim Sander, vice president of IT at Applied Systems, an insurance-agency management-systems company in University Park, Ill.

Carmine Iannace, IT director for The Brattle Group, a business consulting firm in Cambridge, Mass., says he has done likewise. "We've used blanking plates in our empty racks to direct airflow. We move around servers to balance the cooling load in the data center. In addition, we keep an eye on the servers that are in development — if they are not in use, they get shut down." Iannace also uses the energy-saving features of desktops and laptops, plus he mandates that employees shut down their computers at the end of the workday to save electricity. Further, he turns out the lights in the data center when no one is working there.

2. Energy-spec your servers

Pay attention to the type of IT equipment you buy because it consumes 50% of the power used by the data center, according to a recent U.S. Environmental Protection

Agency efficiency report. Focus especially on x86-based industry-standard servers; they consume 33% of the entire data center power budget. For example, make sure your systems vendors are not "over-spec-ing" power supplies or using high-wattage fans unnecessarily, says Colette LaForce, vice president of marketing for Rackable Systems, an x86 server maker. She recommends looking at systems that have at least 90%-efficient power supplies, which conserve more power and waste less heat than less-efficient models.

At Brattle, Iannace has outfitted all servers to run off of 208-volt power instead of 120-volt power, so the power supplies within the servers themselves are more energy efficient. He also upgraded the core Cisco network switch to 208-volt power. In addition, Iannace has incorporated multicore servers and consolidated through virtualization. The result has been a 50% reduction in cooling requirements, he says.

3. Consolidate and virtualize

Tyler Kilian, supervisor of network systems for UniSource Energy in Tucson, Ariz., also points out the benefits of consolidation and virtualization. With physical servers, "we started running into constraints across the board — both in power and cooling," he says. "We are now at 80% utilization of our power infrastructure through virtualization — best practices for the industry say we are full at 80%. We've been able to maintain that 80% for the past several years even though we've increased our server resources dramatically."

4. Take DC power to the rack and back

Reprovisioning a data center with DC power takes long-term planning. "You can add DC



power to the rack instead of having separate AC power inside each server," Rackable Systems' LaForce says. "DC supplies are far more powerful, efficient and have far fewer parts in them, making them less failure prone. Putting them in the system and then bringing DC power to the rack can save 10% to 30% immediately" in your power costs. Most server manufacturers offer a DC power option.

5. Modify cooling and power systems

Another way to reduce power consumption in the data center is to reengineer the chilling system. That would involve installing chillers with variable-speed fans, running chillers at higher-than-normal temperatures and using free cooling where available.

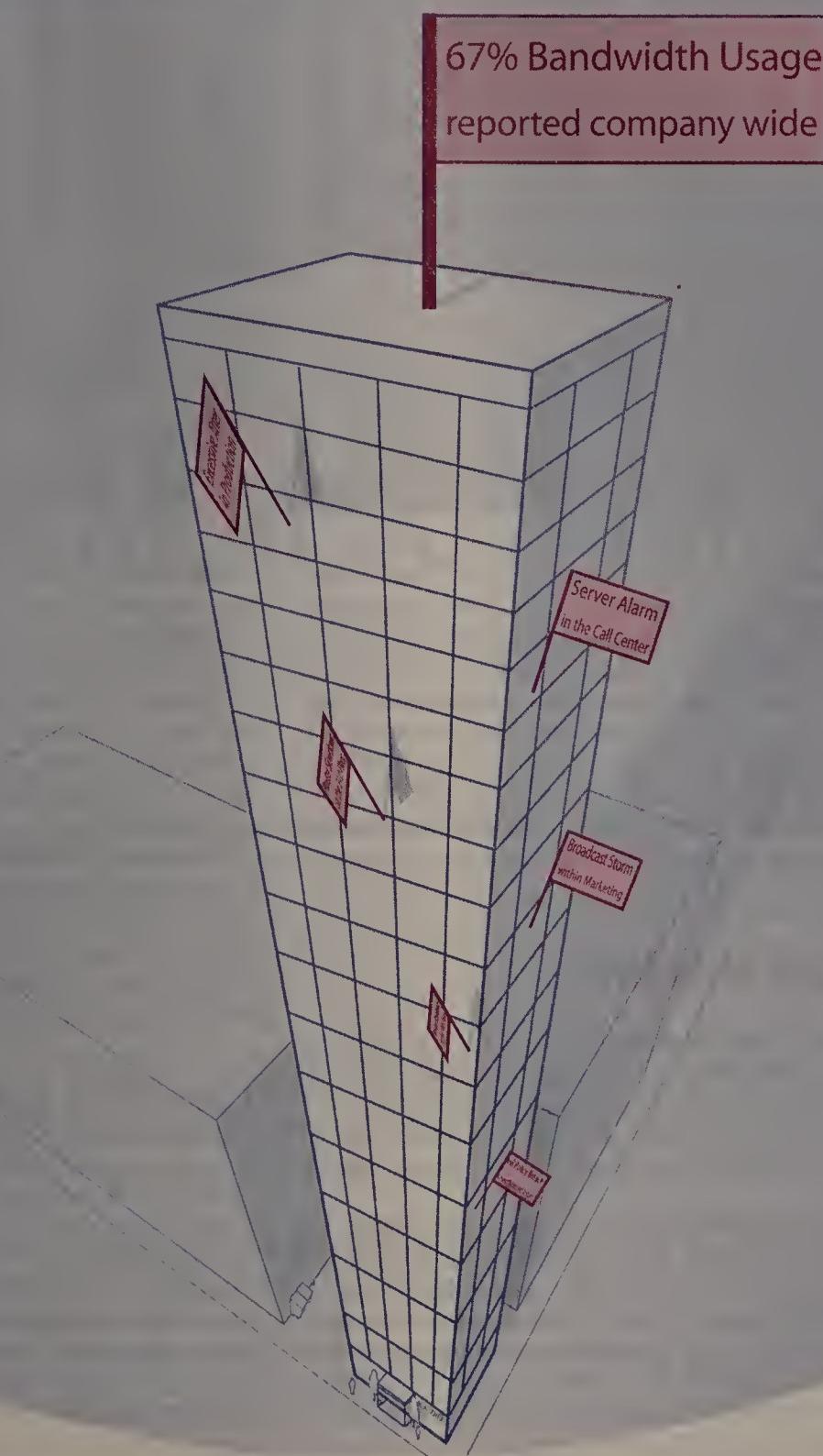
"We are looking at having a more managed cooling and energy infrastructure — things we can track more specifically," UniSource Energy's Kilian says. "We are changing our cooling strategy to in-row systems that . . . will be able to adjust for the proper amount of cooling in the row. In areas with lower server densities, we will be able to turn the fans down to consume less power and [vice versa]."

Adjusting chillers to run at higher temperatures also can save money, EYP's Godrich says. "If you can run a chiller at 10% higher, you won't see any delta peak for your servers."

Godrich also says IT should take advantage of geography. Colder climates, for example, could provide a cost advantage in that cooling down air conditioners with ambient cool air or ice might be possible.

Connor is principal analyst for Storage Strategies Now. She can be reached at dconnor@ssg-now.com.

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Where to turn for advice about power

Get a grip on your IT power consumption with metrics and guidance from these data center experts

BY JOANNE CUMMINGS

The Green Grid

FOUNDED: February 2006

PURPOSE: Formed to build metrics and provide better communications among data-center facilities and IT staffs, so that the people who pay the power bills (facilities) can work with the people who generate them (IT).

KEY VENDOR PARTICIPANTS: Advanced Micro Devices, American Power Conversion, Dell, HP, IBM, Intel, Microsoft, Rackable Systems, SprayCool, Sun and VMware.

ENTERPRISE PARTICIPATION: AllState Insurance, British Telecom, Digital Realty Trust, Enterprise Rent-A-Car, News Corp., University of California San Diego and the Uptime Institute.

WORK TO DATE: Offers the Power Usage Effectiveness (PUE) and Data Center Infrastructure Efficiency (DCiE) metrics for tracking data-center power consumption.

FUTURE WORK: Will provide workload-specific IT productivity metrics with the aim of enabling better planning and tracking of overall data-center power consumption. These metrics, for use with PUE and DCiE, should begin to appear next year.

APPLICABILITY SCORECARD: A-. The group has produced workable metrics and has key partnerships across the board with the U.S. Department of Energy (DoE), such groups as the Storage Networking Industry Association's (SNIA) Green Storage Initiative, and key enterprise users. One caveat: The Green Grid takes a broad look at the data center as a whole, and the result could be slowly evolving, less specific guidelines.

SNIA's Green Storage Initiative

FOUNDED: October 2007

PURPOSE: Focused on data-center storage issues, the group's goals are to evangelize the need for power efficiency in storage and to produce power-efficiency metrics for data-center storage hardware, such as arrays and switches.

KEY VENDOR PARTICIPANTS: Brocade Communications, CA, Cisco, Dell, EMC, HP, Hitachi, IBM, Intel, LSI, Microsoft, Network Appliance, Oracle, QLogic, Seagate Technology, Sun and Symantec.

ENTERPRISE PARTICIPATION: Primarily vendors, although some nonprofits and small enterprises hold nonvoting positions. A sample includes the Arizona Department of Transportation, Hudson's Bay Co. and Nielsen Media Group.

WORK TO DATE: Technical working groups are building storage metrics for array capacity (watts per gigabyte of storage), switch efficiency (watts per gigabit of bandwidth) and server I/O (watts per number of operations). SNIA is planning a series of plugfests this spring to collect storage-power data from various data center environments. Initial metrics are expected by year-end.

FUTURE WORK: Once the metrics are built, SNIA will hand them off to enterprises and larger programs to use in developing data-center power metrics. Potential recipients include The Green Grid and the Energy Star program run by the U.S. Environmental Protection Agency (EPA) and the DoE.

APPLICABILITY SCORECARD: B-. The group's focus on storage is a plus, because storage this year is set to overtake servers in data-center power consumption, IDC says. Still, it is vendor-run, expensive to join (\$2,500 for nonvoting members, in addition to SNIA membership dues) and slow moving.

The Green Data Project

FOUNDED: September 2007

PURPOSE: Focuses on storage from a software standpoint. The group intends to evangelize data-management best practices, including use of e-mail- and data-



base-archiving software, to reduce overall storage needs and thus power consumption.

KEY VENDOR PARTICIPANTS: C2C Systems, CA, Caringo, Clearview Software, Data Islandia, Data Management Institute, FileTek, JPR Communications, KOM Networks, Plasmon, Qstar Technologies, Toigo Partners, TPI Technologies and Zerowait.

ENTERPRISE PARTICIPATION: American International Group, Family Dollar Stores, FedEx, Mars and the county of Santa Clara, Calif., among others.

WORK TO DATE: White papers, some best practices reports, and ongoing dialogue via the Drunkendata.com blog.

FUTURE WORK: Planning a free Compliance, Carbon footprint reduction, Cost savings and Continuity (C4) summit in Tampa, Fla., this spring aimed at getting members together to discuss data-management strategies within vertical industries. Eventually, the project will publish a series of vertical-focused best practices guides for data management.

APPLICABILITY SCORECARD: B. Focus on cleaning up storage practices will make hardware initiatives more efficient. The group has good enterprise representation among its 5,000 members to date, with no cost to join. The jury is out on how big an impact cleaner data management will have on the overall power problem.

The EPA's Energy Star Program

FOUNDED: Energy Star began in 1992 as an energy-efficiency labeling program primarily for consumer products. In August 2007, the EPA released a study on data-center power consumption, which found that data centers consume 1.5% of total U.S. electricity.

PURPOSE: Create Energy Star ratings for data centers.

KEY VENDOR PARTICIPANTS: Vendor sponsors for recent stakeholder discussions included APC, Emerson Network Power, HP, Intel, SprayCool and VMware.

ENTERPRISE PARTICIPATION: Primarily a government-run program, although recent meetings drew attendees from eBay, Pacific Gas & Electric and Wells Fargo Bank.

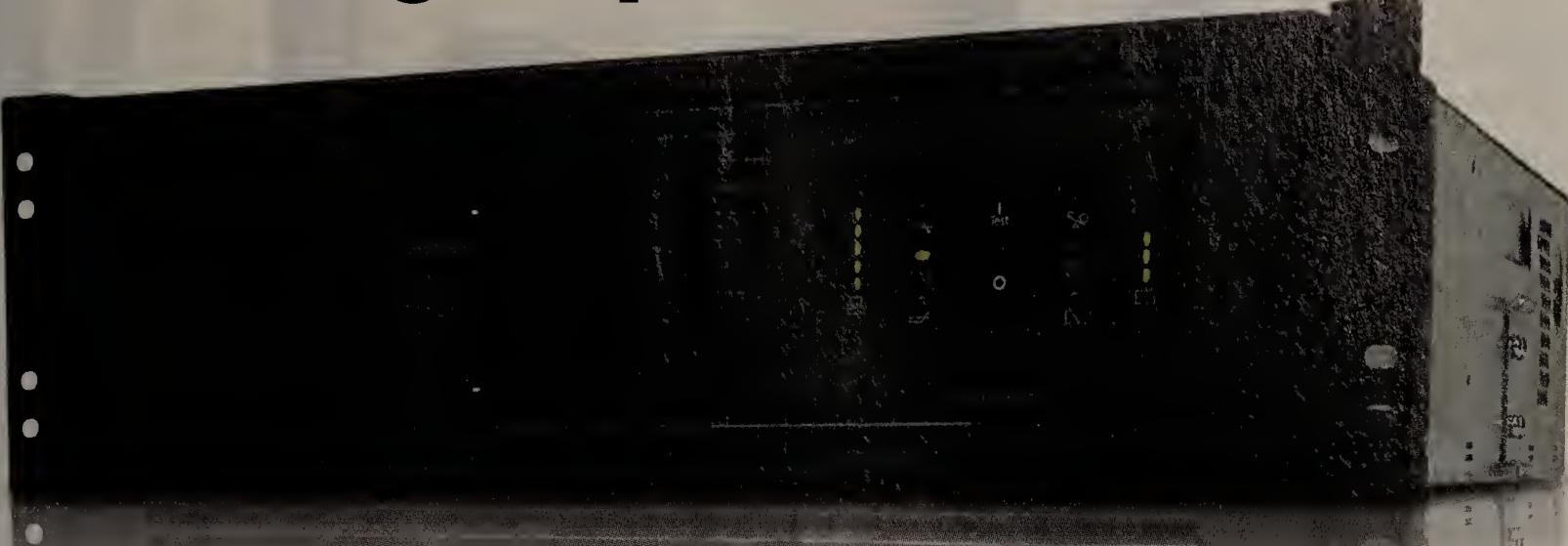
WORK TO DATE: Released report findings. Along with The Green Grid and other groups, the EPA is developing energy-efficiency specifications for data-center equipment.

FUTURE WORK: Will build an Energy Star benchmark for data centers that reflects whole-building operations, but has not nailed down when it will be available.

APPLICABILITY SCORECARD: B+. Should provide vendor-neutral energy-efficiency benchmarks any enterprise could use. Has a strong partnership with industry, including The Green Grid. Still, it's a government-run program that moves slowly.

Cummings is a freelance writer in North Andover, Mass. She can be reached at jocummings@comcast.net.

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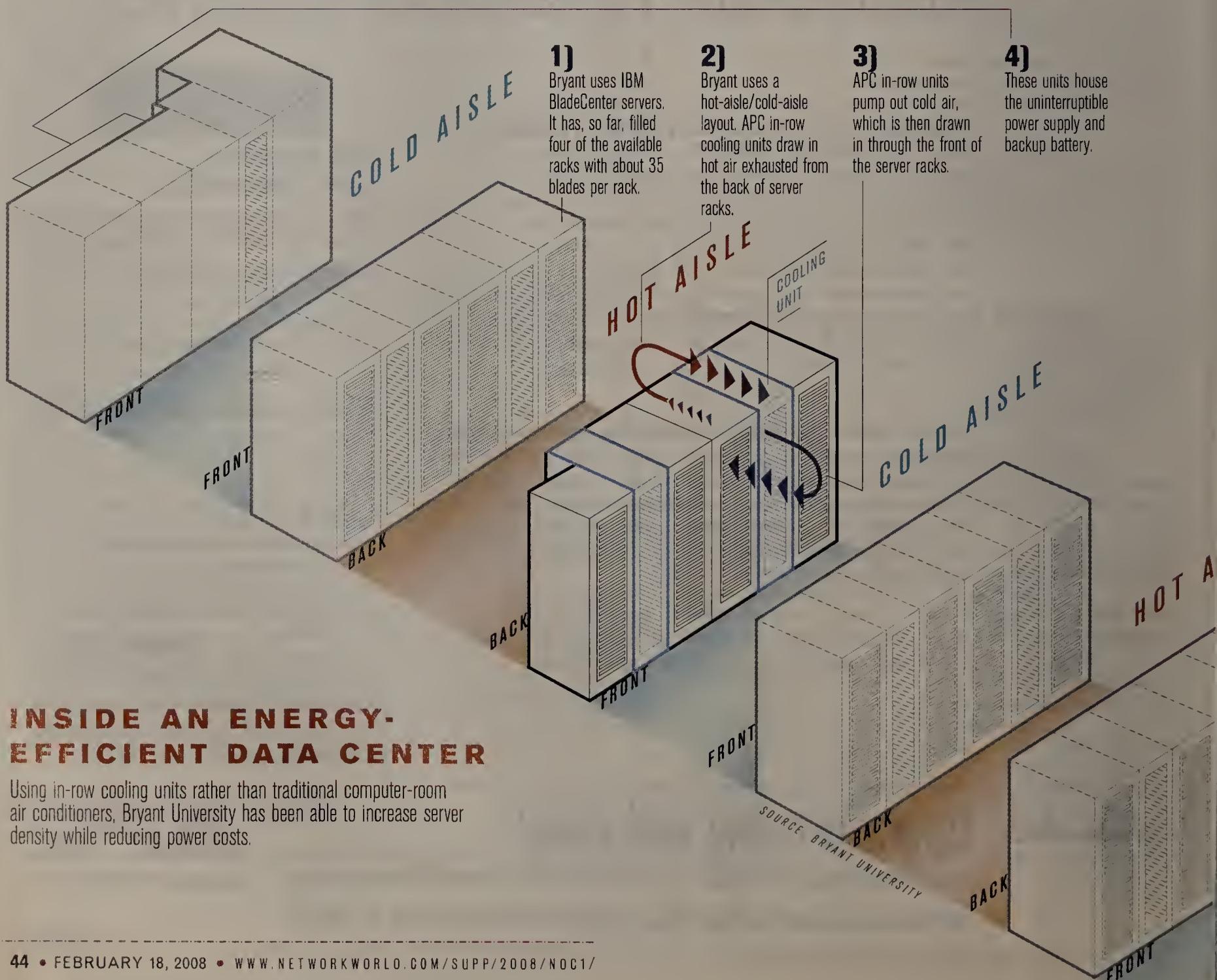
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Cool School

Bryant University sees a 20% drop in power costs by consolidating servers and using in-row units to cool them down

BY ROBERT MULLINS



hen Bryant University wraps up its proof-of-concept analysis of its new data center — a next-generation, blade-server-based computing facility with in-row cooling — it anticipates no surprises. The school expects to see energy savings of about 20%, or as much as \$20,000 a year, compared with its old setup. That's what the results of the analysis, expected out within weeks, should show, says Richard Siedzik, Bryant's director of computing and telecommunications services.

Bryant is working with its primary vendors, IBM and American Power Conversion (APC), to document the efficiency of the new data center's computing and energy infrastructures. In December, it installed IBM's

recently updated Systems Director Active Energy Manager software to determine specific energy savings. With the software, Bryant can monitor energy use, and with that data determine the best way to deploy workloads or cap power use to prevent cost overruns.

Bryant, a private school in Smithfield, R.I., powered up the \$900,000 data center last May. Representing the latest in modular design, the data center lets Bryant add server, storage and network capacity as needed. That sort of dynamic capability is the hallmark of today's universities. As elsewhere, the 3,600 Bryant students come predominantly from the Internet and cell-phone generation — now they're all into social networking through MySpace, Facebook and the like, too.

"Every time students come back from semester break, they come back with more and more mobile devices," Siedzik says.

The new data center is helping IT keep up with the crazy demand — while maintaining highly efficient computing and power infrastructures.

Bogged down by inefficiencies

Bryant's IT department provides each student with a laptop computer and has made wireless Internet access available throughout the 420-acre campus. Bryant also has converted to an IP-based campus telephone system; in the wake of last year's fatal shooting rampage at Virginia Tech, it also set up an IP-based emergency notification system.

As computing demand surged from such initiatives as these, Bryant's infrastructure — servers scattered about in various campus buildings — became increasingly inadequate. "We spent most of our time managing around our shortfalls and our inefficiencies," Siedzik says.

Consolidating IT resources in a new data center made good sense, but one challenge loomed: The ceiling heights at available campus sites were too low for a traditional layout of servers and storage with a raised

"IF MORE COOLING IS
CALLED FOR IN A RACK,
ONLY THOSE COOLING UNITS
THAT ROW RAMP UP,
THERE'RE INDEPENDENT,
AND VERY PRECISE."
Richard Siedzik,
Director of Computing and
Telecommunications Services

floor and a plenum beneath for cabling and air circulation. Among all participants, only IBM submitted a design taking this limitation into account, Siedzik says.

IBM's design features BladeCenter servers and in-row cooling in which APC cooling units are placed between racks of servers (see graphic). In-row cooling differs from the more traditional approach of placing computer room air conditioners (CRAC) around a data center. The problem with the CRAC approach, Siedzik says, is that sometimes the units work at cross purposes — one unit might be cooling the air while a second dehumidifies it and a third humidifies it.

By comparison, an in-row unit provides "precision cooling." If the server next to it heats up during operations, the in-row cooling unit cranks out cooler air, then dials down when the server slows down. "If more cooling is called for in a rack, only those cooling units within that row ramp up. They're independent, and very precise," Siedzik says.

Precision cooling was particularly important because of the blade servers, he adds. Their compact design, compared with traditional rack servers, means there's less space inside a server for airflow and more heat is generated.

More power, better efficiencies

By replacing older servers scattered around campus with new blades matched with in-row cooling, Bryant added processing power while reducing energy use. Siedzik estimates that the university's old, decentralized system drew about 60 to 70 kilowatts of power altogether. The new 500-square-foot data center is designed to provide as much as 60 kW, but for now consumes 43 kW, which means there is room to grow and still be energy efficient.

Aside from the new data center, Bryant already had adopted virtualization, which lets it increase server utilization rates and reduce the total number of servers needed. Server utilization has grown from roughly 10% to about 55%, which itself is a form of energy savings, Siedzik says. He also estimates that standardizing on operating systems and software applications, as well as other efficiencies, has reduced operational expenses by about 30% from before the upgrade.

Siedzik is confident that the numbers will show Bryant's project was a sound investment for the school and its students, faculty and parents. "I think directly they benefit because we can reduce our overall costs, and that impacts students," he says. "Indirectly, we are more environmentally responsible and we can provision more quickly as demand [grows] for more computer services."

After all, another semester has just started.

Mullins is a technology writer in Santa Clara, Calif. He can be reached at rjmullins5@comcast.net.

A future look at data center power

How cloud computing, liquid cooling and proximity communications could one day lower IT's energy consumption **BY ROBERT MULLINS**

The "No Power Struggles Project" sounds like some utopian political system where different factions work for the common good. In fact, it's the name an HP researcher gives to his dream of a harmonious data center.

Researcher Parthasarathy Ranganathan foretells a future in which power management features will be built into the processor, memory, server, software and cooling systems. Coordination will be paramount. "What happens if you turn all these elements on at the same time?" the principal research scientist at HP Labs asks. "How do I make sure that the system doesn't explode?"

Power management systems will have to operate holistically, without one component conflicting with another, Ranganathan says.

Ranganathan is just one of many researchers at the tech industry's biggest labs looking beyond virtualization, multicore processors and other established technologies to see how future data centers will handle increasing demands for processing capability and energy efficiency while simplifying IT. Another is Laura Anderson, IS manager at IBM's Almaden Research Center. "I think we're on the cusp of another revolution," she says. "We're talking about doing something to simplify and integrate these things in a way so that mere mortals can manage them."

Cloud computing

Cloud computing, one approach Almaden researchers are pursuing, already has manifested itself in the Blue Cloud initiative IBM launched three months ago. Under the Blue Cloud architecture, enterprises can get Internet-like access to processing capacity from a large number of servers, physical and virtual. By not having to add machines locally, enterprises save on the cost of powering up and outfitting new computing facilities. Cloud computing also could help reduce ongoing energy consumption, because enterprises will not need to accommodate capacity they will not use all the time.

This spring IBM will take the concept further, offering BladeCenter servers with power and x86 processors, and service management software — a "Cloud in a Box," so to speak," says



"We shifted away from [liquid cooling] technology, but it's coming back" as a good alternative to air conditioning.

— TOMMY MINYARD, assistant director of advanced computing systems, the Texas Advanced Computing Center

Dennis Quan, senior technical staff member at IBM's Silicon Valley Lab.

Cloud computing will mature in coming years as enterprises increasingly turn to IT to serve their markets, Quan says. Certainly Web 2.0 sites posting user-generated content will proliferate, driving the need for cloud computing. But demand will come from mainstream enterprises, too. "Financial services firms are saying, 'We've run out of space ... so what can we do?'" he says. "They need to have a compute infrastructure that's scalable."

Liquid cooling

Liquid cooling, once featured in IBM mainframes and Cray supercomputers, may be returning to data centers as an alternative to air conditioning, says Tommy Minyard, assistant director of advanced computing systems at the Texas Advanced Computing Center at the University of Texas at Austin.

In a white paper, data-center solutions provider 42U describes a variety of liquid-cooling approaches under development. They include modular liquid-cooling units placed between racks of servers; a new door at the back of a server rack with tubes flowing with chilled water; and server racks with integrated power supply, distribution and liquid cooling.

Sun Labs is researching liquid cooling but is

looking for an environmentally correct alternative to Freon, says Ali Alasti, vice president of engineering of the systems group at Sun Labs.

"You're going to see a lot more of [liquid cooling] in the next five years, but [in a form] that is a little more friendly to the idea that we don't want people choking on some gas that may be dangerous to them," Alasti says.

Computing without wires

Sun Labs is looking at a way to eliminate copper from processors with what it calls "proximity communication." Signals now are sent from one chip to another with copper wire. With proximity communication, processor dies touch one another directly, eliminating the need for wiring. "The basic principle is to use capacitor coupling directly on the die to transfer data from one chip to another chip," says Hans Eberle, a distinguished engineer at Sun Labs.

The technology is a couple of years away from being used in a product, Eberle says. But once in use, the result would be a hundred-fold increase in I/O density and lower power consumption.

Mullins is a technology writer in Santa Clara, Calif. He can be reached at rj.mullins5@comcast.net.

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IT Roadmap: Agenda for the Day

Not just compelling new technologies and state-of-the-art best practices, but how the pieces fit together to create an architecture that can drive business.

7:30 Registration and Complimentary Breakfast

8:15 Welcome Address and Agenda for Action Paul Desmond, Events Editor, Network World, Inc.

8:30 End-User Keynote Presentation: Neville Teagarden, CIO of ProLogis - Topic: IT Infrastructure Library (ITIL) and Microsoft Solutions Framework - making complex projects more manageable.

9:15 Technology Keynote Presentation: Peter Watkins, CEO of Webroot

10:00 Refreshments Break

MORNING TRACKS (Choose One)

10:15 Each information-packed track presents a real-world user case study, vendor-specific solutions, and best practices you can take back to your enterprise

Virtualization

Andreas Antonopoulos, Nemertes Research

VoIP, Collaboration & Unified Communications

Irwin Lazar, Nemertes Research

Network Management, Automation & Control

Jim Metzler, Ashton Metzler & Associates

NAC: Network Access Control

Joel Snyder, Opus One

Next-Generation WAN Services

Johna Till Johnson, Nemertes Research

12:30 Complimentary Lunch and IT Expo is Open

AFTERNOON TRACKS (Choose One)

2:30 Security and Compliance

Andreas Antonopoulos, Nemertes Research

Web 2.0 in the Enterprise

Irwin Lazar, Nemertes Research

Network & Application Acceleration

Jim Metzler, Ashton Metzler & Associates

Enterprise Mobility

Craig Mathias, The Farpoint Group

Data Center Infrastructure & Management

Johna Till Johnson, Nemertes Research

4:45 Reception and IT Expo Take this opportunity to visit the expo hall and learn about the best in IT products and services. Refreshments will be served.

6:00 Passport Drawing Fantastic giveaways and other great prizes! You must be present to win.

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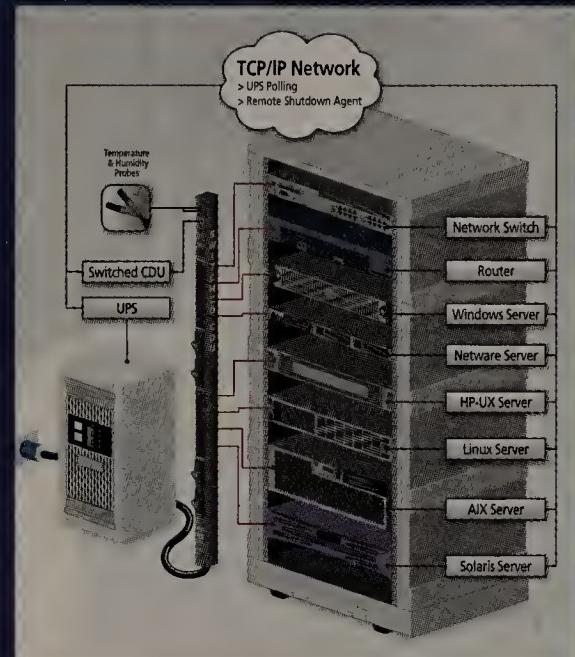
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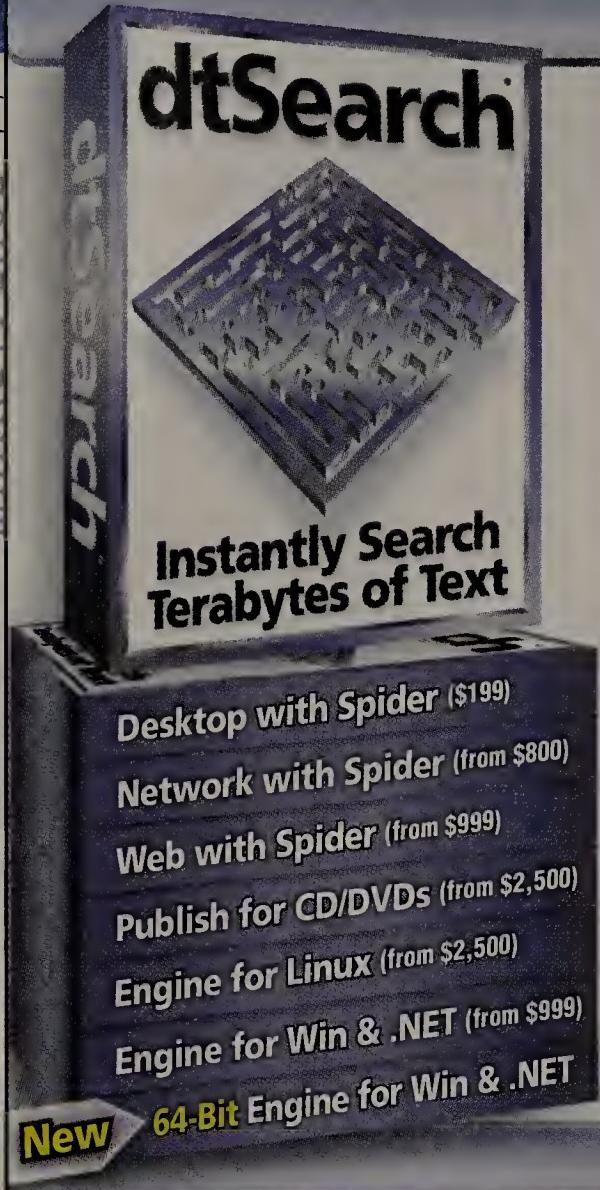
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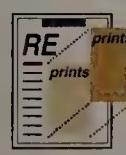
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BACKSPIN

Mark Gibbs

Comcast, serving users or itself?

Consider this statement: "Critical decisions should not be based on the demands of the vocal minority ... but on what is needed to serve the best interests of all Internet users." This laudable statement is from Comcast's response to the public notices issued by the FCC's Competition Bureau on Jan. 13.

The reason for the notices and Comcast's response was that Vuze, a company that uses peer-to-peer (P2P) technology to distribute movies, alleged its service was being intentionally degraded by Comcast. Comcast's tedious and lengthy response confirms that the ISP was, in fact, doing just that.

So why would Comcast mess with Vuze's service or any other traffic? According to an Ars Technica article, "In the Comcast network, each node typically serves 450 households, but when as few as 15 P2P BitTorrent upload sessions are running concurrently, all 450 homes can see their network access impeded enough to be noticeable."

To deal with Vuze and other P2P services, Comcast was throttling back P2P traffic to minimize potential network disruption. Like the other big ISPs, Comcast makes no service-level commitment to consumers so whatever bandwidth you get is whatever you get, and if the throttling impacts what you're doing, tough luck.

Of course, should Comcast decide to use P2P techniques to deliver movies it will, unlike Vuze, be completely free to do so. And should it decide that any other type or source of traffic is not in "the best interest of all Internet users" it might choose to block that as well.

While you might argue that it is Comcast's network and it is entitled to do what it wants, there are two serious issues to consider.

First, there is the issue of free and fair competition in the marketplace. Comcast's traffic shaping excludes potential competitors from

access to media that Comcast is publicly licensed to supply.

Second, there's the damping effect: Some start-ups may never get out of the gate if they have to wonder whether their traffic will be interfered with.

That said, there's another, bigger issue that faces us collectively: As a society, we need the 'Net to work really well. At stake is America's global competitiveness. Limited Internet access and poor performance, whether quantified or not, will be a huge impediment to us being, as a culture, "in the game." The quality of the Internet experience affects everything from e-commerce to productivity and innovation.

But the answer is not to regulate how Comcast manages its own network. Let it do whatever it wants, but only where consumers have a choice of service providers. Where there is competition the players will play rationally.

If Comcast had to compete head to head with other ISPs, do you really think it would risk losing customers by shaping traffic? That's what keeps markets honest — when customers have a choice and can vote with their dollars.

But there isn't much competition in many markets, so ISPs will continue to be tempted to manipulate traffic. That will result in users demanding regulations that would hamper that ability. And while that might sound desirable, any such regulations would never work given legislators lack of technical expertise ("tubes" — need I say more?).

So rather than regulating the use of technology, let legislators regulate the technology market to create a competitive environment where consumers have real choice. As onerous as it is to involve politics in technology at all, using legislation to create competition is the one strategy we can use to "serve the best interests of all Internet users."

Your thoughts to gearhead@gibbs.com.



NETBUZZ

News, Insights, oddities

Confessions of a caller-ID spoofer

He spoofed the HR director's work phone number, then the number of that guy's boss, before moving up to a vice president, and finally the CEO. He says he had no choice. He also says "this thing that I did is bad and should be outlawed."

This thing that he did is perfectly legal, you may know already, although efforts have been under way to have that rectified.

Background: The major telecom equipment maker whose employee A.G. Bell had recently left owed him thousands of dollars in unpaid commissions, he says, yet the HR department stopped returning his calls, instead "hiding behind voice mail." Spoofing the HR director's number got his underlings to pick up the phone, at least until they wised to that ploy, at which point Bell — a fictitious name I'm affording him to protect his current job at another telecom vendor — started spoofing numbers right on up to the top of the org chart (not to mention a White House number — seriously).

"Juvenile? Yes," Bell acknowledges. "Effective at getting past call screeners? Absolutely. Subject to horrible abuse? Totally."

He says he always identified himself honestly once he got a live voice on the line.

We've been chatting via e-mail about what he did, his minor ambivalence about having done it, and his major concerns over the ease with which others with more criminal agendas could abuse spoofing. What follows is an edited transcript:

At what point did the light go on and you thought: "Hey, I'll use a caller-ID spoofing service so they can't hide behind voice mail"?

In my mind I was a victim forced to use distasteful means to take care of my family. I worked in the converged voice space, so the

mechanics of caller ID were not unfamiliar to me or to the crew of geeks I call friends. The light went on over beers — I was complaining about the former employer's call-dodging to some engineer friends and the suggestion of using a local vendor's lab to spoof caller ID came up. Another engineer said, "Don't reinvent the wheel, just Google 'spoof caller ID service.'" I got 32,000 hits. Spoofcard came up first.

Explain the mechanics of how Spoofcard works.

So, I gave them \$20 for an hour of caller ID misrepresentation. Although I hate that it seems to be legal for them to offer this service, I love their implementation. Speaking as an engineer and a salesman, they really built a sweet platform.

You call a toll-free number, enter your account number, enter the 10-digit number you wish to call, and then the number you wish to be displayed on the recipient's caller ID.... Prompts go like this: Press one to record the call, two to not record; one to use your normal voice, two to use a man's voice, three to use a woman's voice.

The conversation would be recorded with no beeps, artifacts or notification that recording was taking place, and could be downloaded at leisure from Spoofcard.com. For \$20 I had a complete record and recording of every call made, of every voice mail left. Beautiful.

Did you have qualms about doing it? Any concerns about legality? Ethics?

I honestly had more concern with the way it would be perceived if my claim had gone to court (perception of the judge) than over the legality or ethics of the spoofing itself. Had my former employer not been in breach of contract, been acting immorally (in my opinion) or been refusing to take or return my calls, then there is no way that I would have been able to rationalize spoofing other people's ID. To be clear — I always identified myself when the call was picked up.

See Buzz, page 12

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free webmail service and call it

The image shows a screenshot of the GMX Mail web interface. On the left, there's a sidebar with links like GMX Mail, Inbox (6), College, Newsletter (3), Private, Sports (1), Work, Spam, Drafts, Sent, and Trash. The main area has tabs for E-Mail, Address Book, Calendar, and My Account. A search bar at the top says "Search Mail". Below it is a "Compose" button and a "Check Mail" link. The inbox table lists several messages from various senders with subjects like "Got your message!", "Dinner last night", "How are you?", etc., along with their sizes and dates. A message preview for Kevin Smith is shown, mentioning a change in gym training times. A large red banner at the bottom right encourages users to sign up with the text "100% Free! The widest selection of free e-mail addresses. Sign up now!" and the website "WWW.GMX.COM".

From	Subject	Size	Date
Sarah McDonald	Got your message!	325 KB	10:34 a.m.
Kevin Smith	Dinner last night	116 KB	11:11 a.m.
Susan L. Moore	How are you?	334 KB	11:18 a.m.
Bob Jones	Baseball on Thursday	325 KB	11:40 a.m.
Peter Williams	Call me tonight	49 MB	11:52 a.m.
James Walsh	How was your trip?	334 KB	01:41 p.m.
Alex Miller	Shopping with mum	325 KB	02:08 p.m.
Jennifer Moran	What's up?	116 KB	09/26/07
Simon B. Miller	Good morning sweetheart	334 KB	09/26/07

From: Kevin Smith
Subject: Dinner last night

Hi John,

I wanted to let you know that we changed our weekly gym training to Thursday nights. Meet us in front of the courts at 7:30 – please be on time. If we want to win a lot of games, we really need to focus and work hard.

If you can't make it, let me know by calling me.

Thanks, Mark

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09/28/07 11:11 a.m.

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